

10/1
AGRICULTURAL REFERENCE DEPARTMENT
CLEMSON COLLEGE LIBRARY

THE AGRARIAN

OFFICIAL STUDENT PUBLICATION



Clemson College - South Carolina - November 1950

HOW NEW IH PARTS DEPOTS SERVE FARMERS —BETTER

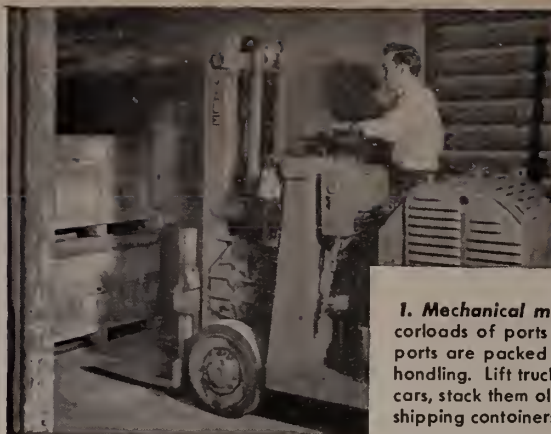
*A report to you about men and machines
that help maintain International
Harvester Leadership*

Speedy parts service cuts costly field delays—often saves crops for farmers! That's the big reason why International Harvester is establishing a nation-wide network of parts depots.

Several of these new depots are already in operation; others are on the way. They all are designed to keep IH equipment in the field when days mean dollars.

Depot stocks include every type of casting, stamping, forging, and standard hardware used in current machines—even to the cotter pins. Parts for machines no longer in current production are on call. Deliveries from depots are fast. Seasonal stock items are shipped ahead of the "using season." All stock orders are shipped exactly in accordance with established schedules. Emergency parts orders are filled the same day.

These new parts depots are another example of the "do it better" creed at International Harvester. This refusal to let well enough alone brings constant improvements in the design, manufacture, and distribution of IH farm equipment.



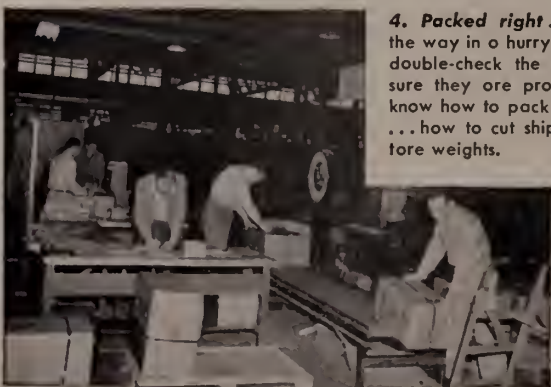
1. Mechanical muscles stock depots with corloads of parts from IH factories. These parts are packed on pallets for fast, easy handling. Lift trucks carry pallets from box cars, stock them along storage aisles. These shipping containers then become parts bins.



2. Thousands of parts right on tap. A complete stock, based on sales records, is maintained to meet all customer needs. Here's an order clerk loading his selector truck from the pallet shipping cases which carried the parts to the depot. The wrong parts can't get into these bins.



3. Production line methods give orders the "hot-foot". An overhead chain conveyor connects the storage bins, rows of pallets, and tier racks with the shipping section. As parts orders are filled, this overhead conveyor rushes the selector trucks to the packing benches.



4. Packed right...packed light... on the way in a hurry! Skilled packing teams double-check the shipping orders—make sure they are properly filled. These men know how to pack parts for safe shipment...how to cut shipping costs by reducing tare weights.



International Harvester Builds McCormick Farm Equipment and Farmall Tractors ...



Motor Trucks ...



Crawler Tractors and Power Units ...



Refrigerators and Home Freezers ...



INTERNATIONAL HARVESTER

Chicago 1, Illinois

THE AGRARIAN

VOLUME 10

THE CLEMSON AGRICULTURAL COLLEGE

NUMBER 1

IN THIS ISSUE

Fact or Fantasy	1
Armstrongs Present Paper	2
Dean Cooper Heads Agronomists	4
Operation Pollination	6
A Man, A Dare, and A Fellowship	7
Aromatic Tobacco Comes of Age	8
Agricultural Fair	10
Gridiron Stars	12
Grain Sorghums	14
Hormonized Chickens	15
Between the Furrows	16
Tomatoes Fight Back	20
Agrarian Philosophy	20
Estonian At Clemson	24
Timber Cruising	26

JOHN H. PITTS
Editor

HANS F. PAUL
Asst. Editor

ASSOCIATE STAFF

Managing Editor	H. M. Lightsey
Business Manager	J. W. Woodfin
Circulation Manager	W. J. Jenkins
Chief Photographer	H. M. Chaplin
Photographer	L. G. Trimmer
Asst. Business Manager	R. T. Dunlap
Asst. Business Manager	R. B. Johnson
Asst. Adv. Manager	R. T. Hollingsworth
Asst. Adv. Manager	F. M. Flowers
Asst. Circulation Manager	G. F. Stanley
Asst. Circulation Manager	J. W. O'Cain

ASSISTANTS
J. T. Green
H. H. Flowers

ALAN B. SIBLEY
Advertising Manager

DEPARTMENT EDITORS

Agronomy	A. B. Sibley
Agricultural Economics	R. D. Ward
Agricultural Engineering	R. M. Prince
Animal Husbandry	R. E. Cox
Botany	H. F. Paul
Dairy	D. K. Fricke
Entomology	A. C. White
Horticultural	J. L. Sims
Poultry	R. M. Miller
Forestry	R. E. Farmer
Voc. Ag. Education	Q. A. Jowers

ADVISORY BOARD
Prof. B. E. Goodale
Dr. G. H. Aull

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education.—Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising rates: one-fourth page, \$15.00; one-half page, \$28.00; one page \$50.00.

All correspondence should be addressed to THE AGRARIAN, Clemson College, Clemson, S. C.

No article may be reprinted without permission.

Subscription free on request.

Clemson House Fact or Fantasy

By The Editor

No one is more proud of our new Clemson House than I am. It is indeed a credit to Clemson, and would be a credit to any campus. Nevertheless, it was my understanding that the new hotel would house single faculty members, as well as have apartments and rooms for transients, yet the meals are so high that it would take a month's pay check to pay for a month's board. Then too, the food is nothing to brag about. Very few of the faculty members that live at the Clemson House take their meals there. I've eaten there several times, but I'll take the college dining hall anytime now.

Some of our student organizations have held banquets and suppers there, and I hear it took two hours to get them completely served. I don't blame some of the other fraternities and clubs for cancelling plans to entertain at the Clemson House.

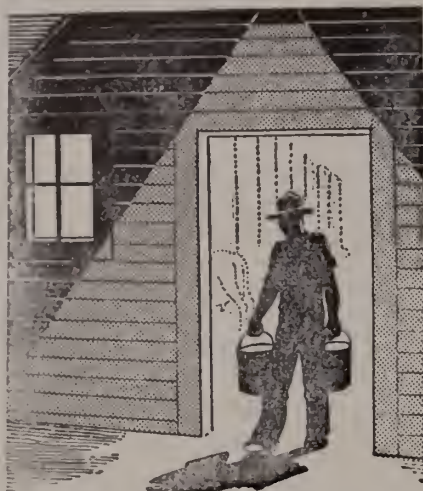
If the powers that be want to make a real success of the hotel, they will cut down a little on the ritzy and try to improve a little on the meals. If the Clemson House would establish a reputation of having excellent, moderate priced meals, with good service, it could easily become a mecca for all Clemson alumni as well as Clemson friends on and off the campus.

Some people might say we should give the Clemson House a chance before we start criticizing it. Granted—it is a bit early for criticism, but it seems to me that they would do well to get started off on the right foot in the beginning, before a general negative opinion of the hotel is established.

COVER

This month's cover pictures Dean H. P. Cooper, newly elected President of the American Society of Agronomy, sitting at his desk. See page four for story. Cover picture by staff photographer Henry Chaplin. The new title plate was designed by Warren R. Brenner, an Architectural senior.

150607



LENGTHEN "SUN HOURS" on Your Farm

Good farm lighting pays in faster work, longer hours in which to work . . . and fewer accidents while working. So be ready for those short winter days when "dark comes so early".



Check lighting in these work areas:



barn yard	hen house
barn floors	poultry yard
hay lofts	work shops
tool sheds	milk house
garage	dairy

Lighting is just one of the many scores of jobs electricity is doing for the 162,000 rural users of the Duke System. Our farm customers are using more electricity in more ways today than ever before . . . to save Energy, Time, and Expense.

DUKE
POWER COMPANY
Serving the Piedmont Carolinas

ARMSTRONGS ADDRESS BOTANICAL CONGRESS IN SWEDEN

This summer, Dr. G. M. Armstrong, head of Clemson's Department of Botany, and his wife Dr. J. K. Armstrong presented an invitational paper on Cotton Wilt Fusaria of the American, Egyptian, and Indian varieties at the International Botanical Congress in Stockholm, Sweden. Although the meeting lasted only for one week in July, Dr. Armstrong and his wife, spent two months in Europe. Dr. Armstrong's wife also holds a doctors degree in plant pathology.

Dr. and Mrs. Armstrong left New York by plane and, after a short and pleasant trip, arrived in London thirteen hours later. This was the first plane journey for both and they found it highly interesting. Shortly after his arrival in England, Dr. Armstrong visited the Rothamstead Experiment Station at Harpenden, Hertfordshire, England.

From England, Dr. and Mrs. Armstrong passed through Scotland to Denmark, where they spent two days.

The Armstrongs travelled through Sweden on train. While in Sweden, the Doctor and his wife visited the old and famous university at Upsalla where Linneaus, world famous botanist, lived and taught. After their stay in Sweden, the Armstrongs travelled to Kufstein in the Swiss Alps.

Dr. and Mrs. Armstrong then journeyed to Holland. Here the large number of canals and dairy cows impressed them most. From Holland, the Armstrongs travelled through Italy and France. In France they visited a winery which had ten miles of underground tunnels that were used for the ageing of wines. While in France, Dr. Armstrong encountered an old friend and classmate, Dr. Harry Parker, who is with the U. S. Department of Agriculture in that country.

After a delightful fifty days in Europe, the Armstrongs returned to this country by plane.

COMPLIMENTS OF

Sibley Farms



Producers of

DIXIE CRIMSON CLOVER

COKER'S FULGRAIN OATS

KENTUCKY 31 FESCUE



ALAN B. SIBLEY, Owner

Route 1 Milledgeville, Ga.



DR. F. L. GRABER PRESENTS GAVEL TO DR. COOPER

By HARRY M. LIGHTSEY
Animal Husbandry '52

Dean Cooper Heads Agronomists

Dr. H. P. Cooper Elected President of the American Society of Agronomy

At the annual meeting of the American Society of Agronomy in Cincinnati earlier this month, Dr. Herbert Cooper, Dean of the School of Agriculture, was elected President for the coming year. Dr. Cooper, whose advanced work in the field of soil science is known throughout the world, had been chosen vice-president of this body at its annual meeting last year. These high honors which have come to Dr. Cooper are certainly richly deserved by a man who has contributed so much to modern agriculture in the field of plant nutrition.

Dr. H. P. Cooper was born on a farm near Ridge-

way, South Carolina, on February 18, 1887. This was the time in the South when, according to Dr. Cooper, "a man either planted cotton or he didn't plant." Perhaps it was the poor soils of this area that fastened Dr. Cooper's interest in soils and soil minerals.

Dean Cooper received his Bachelor of Science degree in Agronomy at Clemson in 1911. From Clemson, Dr. Cooper went to Wisconsin, where he received his Masters degree in 1915. After receiving this degree, Dr. Cooper moved to Pennsylvania State College, where he instructed in agronomy from 1915 to 1917. From Pennsylvania State, he

went to Massachusetts College where he served as an assistant professor from 1917 to 1920. From 1920 to 1922, Dr. Cooper served as an instructor in field crops at Cornell, and it was at Cornell in 1922 that he received his Ph.D. Following the receiving of this degree, Dr. Cooper became an assistant professor of agronomy and served at Cornell in this capacity until 1930. In 1930, he was recalled to his alma mater where he became a professor of agriculture. In 1936, Dr. H. P. Cooper was appointed Dean of the Clemson School of Agriculture and Director of the South Carolina Experiment Station.

RETURNS TO CLEMSON

Following his appointment as Dean of the Clemson School of Agriculture and Director of the South Carolina Experiment Station, Dr. Cooper began concentrated work in three important agricultural fields. These were (1) the study of the relations between applied fertilizers, soil characteristics and liming requirements; (2) the correlation of theories regarding necessary soil minerals and the manner, method and order in which these soil minerals are absorbed; and (3) the correlation of theories regarding the effects of energy properties of some plant nutrients on availability, on rate of absorption, and on the intensity of certain oxidation-reduction reactions.

FIRST RESEARCH

The first work that Dr. Cooper undertook after 1936 was concerned with soil liming practices in South Carolina. After intensified research that included the testing of over two million, one hundred and fifty thousand soil samples from areas throughout the state, the South Carolina Experiment Station published Circular 60, written by Dr. Cooper, entitled "Fertilizer and Liming Practices Recommended for South Carolina." This circular was published in October, 1939, and it was from it that Dr. Cooper received his first honors as an outstanding soil scientist. In this circular, Dr. Cooper brought out three important facts: (1) That "approximately forty per cent of the soil samples had a pH value of 5.5 or less and were classified as strongly to extremely acid." (2) "Another forty per cent of these samples of cultivated soil had a pH value ranging from 5.5 to 6.0, which would be classified as moderately acid." (3) "The remaining twenty per cent of the soil samples were classified as slightly acid to alkaline, and like the better portion of the moderately acid group, is capable of supporting a profitable diversified system of agriculture."

Following the publication of this circular, Dr. Cooper turned his attention to his second research project. During the years of the war, the experiment station, under the guidance of Dr. Cooper, worked hand in hand with the war effort and were rewarded for their troubles by seeing the farmers produce record crops. Shortly after the war, Dr. Cooper and his associates published several papers emphasizing the relation between the energy prop-

erties of nutrients and the intensity of absorption by plants of the different nutrients. Many soil scientists hailed this theory as being ten years ahead of its time and as representing a much needed field of study. The article itself arose controversy throughout agronomists' ranks and the pros and cons of the subject were discussed heatedly. In the March, 1948, issue of the "Journal of the Australian Institute of Agricultural Research", one author drew special attention to Dr. Cooper's concepts by stating that "the whole of this theory is plain rubbish."

Shortly following this criticism, Dr. Cooper released another paper entitled "The Effects of Energy Properties of some Plant Nutrients on Availability, on Rate of Absorption, and on Intensity of Certain Oxidation-Reduction Reactions". This paper, also, aroused much argument. It is probably the very advanced nature of the text of these papers that renders them so vulnerable to criticism.

PRESENTS PAPER

This summer Dr. Cooper attended the fourth International Congress of Soil Science in Amsterdam, Holland. Prior to the meeting of this body, Dr. Cooper had attended the seventh International Botanical Congress in Stockholm. This is one of the most important meetings of the botanists and it links together all phases of botanical research and instruction. While at the meeting of the International Congress of Soil Science, Dr. Cooper presented a paper on "Differential in the Nutrient Content of Calcium Accumulating and Silicon Accumulating Plants".

During his professional career, Dr. Cooper has joined and is active in several of the foremost national and international agronomic groups. Among these are the American Society of Agronomy, American Chemical Society, American Society of Plant Physiologists, American Soil Science Society, The International Soil Science Society, and many others. Dr. Cooper's outstanding contributions to soil science have been in the fields of mineral nutrition of plants, energy properties of nutrient salts, soil science, and plant physiology.



Shown from left to right is the Cooper family: Herbert, Mary, Mrs. Cooper, Dr. Cooper, Tommy and Louise



Bee cage used for controlled pollination

OPERATION POLLINATION

Did you ever think of the honey bee as a special friend of yours? Well she is, and unlike most friends she puts dollars and cents in the pocket of almost every agriculturist. If farmers could only see the reaching benefits bestowed upon them by this friend, I'm sure more interest would be taken in the care and management of honey bee colonies. If all the honey bees could be removed from the states of this nation for a period of one year, I would venture to say that there would be such a prodigious depletion of many self reseeding annuals and such a shortage of many fruit crops that the economy of the nation would suffer serious consequences.

How is the honey bee such a help? How can she govern the production of fruits and seed? The answers to all of these questions hinge on one word—pollination. The value of the honey crop. However, this service is such an intangible factor that it is impossible to even estimate its true value. It is even harder to convince a fruit or seed grower that this small insect is so indispensable to maximum efficiency in production. True, some fruit is set and some seed are produced when honey bees are not present in quantity; and it is also true that some plants produce when self pollinated. Nevertheless, the plants which necessarily are insect pollinated benefit materially from bees, and even the plants which will produce from self pollination often

By A. C. WHITE
Entomology '51

will produce more fruit or seed of higher quality when cross pollinated by bees.

When it is brought to mind that the honey bee is not a native of this country, I often wonder in what state the agriculture of the United States would be, had the honey bee not been introduced into and thrived so well on the North American Continent. True, there are several families of wild bees which are pollinators, but these are all solitary bees, except the Bumble Bee, and do not exist in sufficient numbers to be effective in an extensive pollination program. Also the present day agricultural practices have so reduced the weedy fence rows and untilled grassland, in which these families reproduced, that the population of these insects has been reduced to an extent that now their pollination work is believed to be an almost negligible factor in most extensive agricultural areas. A half century ago it was not uncommon for Alfalfa, under favorable conditions, to make eight to ten bushels of seed per acre, but today such a heavy yield is seldom seen. James I. Hambleton in charge of the bee-keeping work for the U.S.D.A. summarizes it this way, "The plow and the cultivator will continue in use. The development of more efficient farm machinery will encourage planting large acreages to single

crops. Rail fences will never come back; clean fence rows will remain in vogue. Injurious insects will continue their struggle to outwit man. More and better insecticides will be used to save our crops. What chances do the wild bees have? The only ray of hope is that conservation practices may encourage re-establishing some of the native pollinating insects. As of the moment, and certainly for many years to come, pollination will depend almost exclusively upon the honey bee. The conclusion is an irrefutable one. This country must have a thriving beekeeping industry. Every encouragement to the keeping of honey bees and wise and careful planning will be necessary to provide insect pollination." (The Hive and the Honey Bee—R. A. Grout.)

With the population of native pollinators so low in many areas that they are hardly a factor in pollination, and with the honey bee assuming the whole load, it naturally follows that almost every agriculturist from the dairyman to the seed grower is benefited by the honey bee. The apple growers of New York were among the first to realize the economic benefits of hiring honey bees as pollinators. Many apple varieties are self-sterile. These must be cross pollinated in order to set fruit, and due to the nature of apple pollen, which is sticky and heavy, the job must be done by insects. An example reiter-

(continued on page 28)

A Man

A Dare

and A Fellowship

By WINSTON H. SIBLEY
Animal Husbandry '51

"H. R." and I were bouncing along a road through the mountains of Tennessee in a milk truck. The vehicle was a big, cumbersome affair that we were driving to North Carolina for "H. R.'s" tent leader; but we were glad to have it, because it afforded us a cheap means of transportation from Camp Miniwanca. We also slept in it.

I was thinking about how much fun it was to be out on our own like this, stopping in cities like Detroit, Cincinnati, and Lexington, when "H. R." interrupted my thoughts by saying, "You know, Sib, Mr. Danforth really gave us a great opportunity and some valuable experience in this Fellowship trip. We had a good time, too, meeting all those swell guys from each state college—and then there was little Tom Ajamina from Hawaii and Jim Biggar from Canada."

"Yeah," I agreed; and it had been a swell trip—one that I would never forget. "But, you know, Mr. Sindecuse was wrong when he said that it will be Christmas before we really appreciate our trip. I do already."

"H. R." Caldwell, an ag. senior from N. C. State, was driving; so I settled back on a blanket atop a milk rack to reminisce a little. I remembered way back last spring, when Mr. Goodale called me into his office and explained to me the purpose of the Danforth Fellowship: to choose a man from each state college and develop him fourfold—physically, mentally, socially, and religiously. How lucky I was to have been chosen, and it was with anticipation that I arrived at Lee Hall,

Washington University, in St. Louis, Missouri, on July 30th

Although the milk truck was bouncing violently, I took out my scrapbook that we had been required to keep during our two week tour of St. Louis. The scrapbook, or notebook, was red and white checkered, because it had been covered with an old paper Purina Checkerboard feed bag. The Ralston-Purina Company, of which Mr. Danforth is founder, had sponsored our two-week stay in St. Louis, while the American Youth Foundation, also founded by Mr. Danforth made possible our two week stay at Camp Miniwanca.

I opened up the notebook, and there on the first page was the signature of Mr. Earl A. Sindecuse, our guide, tutor, and friend during the trip. I smiled when I saw the "very excellent" grade that he had put on my notebook, for he had put "very excellent" on practically everyone's notebook.

The second page displayed a picture of Mr. William H. Danforth, himself, in which he was pointing to a plaque reading:

I DARE YOU
TO STAND TALL
THINK TALL
LIVE TALL
THE FOREFOLD WAY OF LIVING

These words illustrate what he is trying to accomplish with youth:

TO BE YOUR OWN SELF
AT YOUR VERY BEST
AT ALL TIMES

Getting into the body of the notebook. I found I had utilized the first pages of it in telling of the Purina Research Farm. A chartered Grey-

hound bus had taken us out there from St. Louis for a three day stay. All of us boys had been living together in the lodge, and we had found the farm a good place to get acquainted.

My notes reminded me of how we had gotten off to a bang with classes and tour. Mr. Elmer W. Powell, the farm's director of research, had spoken to us first, orienting us and explaining to us the purpose of the farm, which is to solve practical problems of not only feeding, but also sound management, careful sanitation, and good breeding, and to bridge the gap between research and the farm.

I turned a few more pages describing interesting lectures and tours to the beef, dairy, turkey, duck, fox, dog, minx, martin, chinchilla, dairy goat, pheasant, pigeon, chicken, hog, and rabbit units. I saw on one page the placing 2-1-3-4, which brought back to my mind the ring of fat cattle that we had judged. In between times we had found recreation in softball and swimming.

The next thing I came to in my book was a brief summary of the farm, acknowledging the fun we had had, the experience we had gained, and the excellent food we had eaten. Too, there was the description of the Greyhound trip back to St. Louis, for my book had served as a diary as well as a notebook.

In St. Louis our time had been spent almost entirely at the St. Louis office of the Ralston Purina Company. Thumbing through the pages, I saw an account of our first lectures, which had dealt with all phases of nutrition—a regular Feeds and Feeding course. Then on over were ac-

(continued on page 22)





Aromatic Tobacco Comes of Age

By J. A. MARTIN

South Carolina Experiment Station

Imagine smoking a cigarette of sweet mellowed aromatic tobaccos, commonly referred to as Turkish tobaccos, and enjoying the smoke in the cool of the foothills of the Blue Ridge Mountains from Virginia to Georgia. You can imagine this now, and you can imagine still further that this aromatic tobacco is grown right here in the Piedmont and mountain areas of Virginia, North Carolina, South Carolina, Georgia, and eastern Tennessee. It's being done on a commercial scale!

During normal times 50 to 75 million pounds of aromatic tobaccos are imported, mainly from Turkey, Bulgaria, Greece, and Soviet Russia, for the manufacture of various blends of cigarettes. During the war these imports decreased greatly, and the interest of our agricultural workers was aroused with respect to growing in this country all the aromatic tobacco needed.

In 1939, Duke University pioneered in aromatic tobacco research in order to determine whether satisfactory tobaccos of this type could be produced in the southeastern part of the United States. Following the first tests, Duke University, with the cooperation of the Agricultural Experiment Stations and Extension Services of Virginia, North Carolina, and South Carolina, has carried out experiments in the Piedmont

and Mountain areas of these states involving cultivation, fertilization, harvesting, curing, storage, and fermentation of several varieties of aromatic tobaccos.

The results of these preliminary experiments have shown that aromatic tobaccos, of equal value to those which have been imported, can be grown on many of our Piedmont and mountain soils; and the crop fits in well with rotations and farming practices common in this area. Because of its high labor and small acreage requirements, it is best adapted to small farms with large families. Since the results of experiments mentioned above prove that aromatic tobacco can be grown profitably in the Piedmont areas, and since the market outlook is strong, a project was initiated at Clemson in 1947, to develop labor-saving methods in stringing the leaves and more efficient curing methods.

Until recently, the big drawback in growing aromatic tobacco was the high amount of labor and handling required at harvest time. Because of these factors, it was recommended that only those farmers who had large families attempt to grow the weed. Children as well as older persons could do the tedious job of stringing and hanging the tobacco leaves. Few able bodied adult farm-

ers had the time or the inclination to personally tackle this phase of the job.

A galvanized rod has been devised on which to impail the tobacco leaves. The rod is 27 inches long and 1/8 inch in diameter. This is only one-half the length of the standard tobacco stick, but it holds almost as much tobacco. Furthermore, the tobacco can be impailed on the rod in a fraction of the time it takes to string it on a stick. This solves one phase of the problem.

The other phase, curing, has also been solved by the construction of a "pilot model" tobacco curing barn measuring 17 feet x 12 feet at the base and 10 feet high. A thermostatically controlled oil furnace with forced air circulation supplies the hot air (100°F) from underneath the roof down through the tobacco leaves. After the air passes through the tobacco, it may be re-circulated or discharged through bottom ventilators, depending upon the relative humidity. If the humidity is above 75 percent, the air is discharged; if below 75 percent, it is re-circulated through the heater and used again.

This type of barn makes it possible to go right on curing tobacco at night and on rainy days. In the past, curing has been done entirely by sunlight. When the sun didn't shine, no curing was done; and, during pro-

longed rainy and cloudy periods, the tobacco was damaged by molds. Under the new arrangements, the tobacco is rolled out of the tobacco barn on portable racks, as usual, and cured by the sun on sunny days; but rolled inside the barn at night, or on rainy days, and cured by the use of heat. Twelve to fifteen days are required to cure tobacco in the sun, — six to eight by the combination sun and heat method. The sun-heat cured tobacco has been judged to be of excellent quality by tobacco experts who have examined the product.

A barn of this size is designed to take care of one-half to one acre of tobacco. The Peirson-Moore Company, Lexington, Kentucky, and the Armco Metal and Drainage Company, Atlanta, Georgia, have cooperated with the writer in developing the complete unit for average size farms.

Aromatic tobacco differs from the other types of tobacco by the small glandular hairs which contain aromatic substances. It is from these small hairs that an oily secretion is produced which gives the aroma to the tobacco. The density of these hairs per leaf is influenced by heredity and environmental conditions. Any environmental factor which encourages vigorous vegetative growth of the plants also causes the density of the hairs to be less and results in a poor quality tobacco. In growing aromatic tobacco the growth of the plant should be controlled in order to obtain small leaves which possess as many glandular hairs as possible per leaf. In this way, quality can be raised to a higher level.

Cultural Methods

In locating a seedbed, a soil should be chosen which is relatively high in organic matter, contains few weed seeds and disease organisms, is well drained, and is near a source of water. The beds should be located on a south or southwestern slope in order to get the benefits of natural heat.

After clearing the plant bed area, the top soil should be pulverized, smoothed, and leveled. The seed bed should be sterilized in September or October so as to eliminate weeds, diseases, and insects. This may be done with steam, by burning, or chemical

treatment. AERO Cyanamid, Granular applied at the rate of one to one and a half pounds per square yard of plant bed has proved to be highly satisfactory for weed control. After sterilization of the seed bed, the fertilizer should be applied at least two weeks before seeding at the rate of two pounds of a complete tobacco plant bed fertilizer per yard.

The beds should be seeded between February 1 and March 1, using 3 to 6 teaspoonfuls of seed per 100 square yards. The seed should be mixed with cottonseed meal, fine sand, or sifted wood ashes, using one quart of such material to each teaspoonful of seed for uniform sowing of the seed.

Tobacco cloth covers are used on the seed beds to increase the temperature and protect plants from unfavorable weather conditions. After a stand of plants has become established in the field, the remaining plants in the beds should be destroyed, and the bed planted with nematode resistant varieties of cowpeas or soybeans.

A heavy and relatively poor soil containing mixtures of sand, gravel, or small rocks is desired for the best growth of aromatic tobacco. The field should have some slope which will give protection against wind damage and provide drainage.

To fertilize aromatic tobacco, 4 to 8 tons per acre of well-rotted stable manure is used as a source of nitrogen. Superphosphate and potassium sulphate are used at the rate of 200 and 160 pounds per acre, respectively. Research is now in progress using various sources of fertilizer material to ascertain their effects on yield and quality.

Rows should be laid off 20 inches apart and the plants spaced four and one-half to five and one-half inches apart in the row. According to these specifications, it will require approximately 60,000 to 70,000 plants per acre. The close spacing has a dwarfing effect upon the leaves of the plants which is favorable for quality.

The seedlings should be hardened five to seven days before transplanting by removing the tobacco cloth covers in order to withstand transplanting. Transplanting is done with a hand transplanter which releases plant and water simultaneously. Plants are placed midway on the side of ridges, approximately half the distance from the bottom of the ridge to the top.

The first cultivation is usually 10 to 15 days after transplanting. During this cultivation the tops of the ridges are raked down away from
(continued on page 30)



The whole farm family participates in the production of Aromatic tobacco. Children as well as older persons can do the tedious job of stringing and hanging the tobacco leaves. The stationary racks in the background have now been replaced with movable racks which can be moved in and out of the barn by one person.

1950 AGRICULTURAL FAIR

On Saturday and Sunday, November 4 and 5 of this fall the agricultural buildings and surrounding campus evidenced a noticeable change. Decorations, signs and streamers adorned both the inside and outside of the buildings which added to the various displays and activities that were taking place. The students in the School of Agriculture had prepared the campus in preparation for the 3,000 visitors, including many Clemson alumni who attended the fair. Lights burned long into the night the week before the fair while the students put the finishing touches on their projects.

Plans for the fair had begun last spring at which time its general organization was decided upon. The Council of Agricultural Club Presidents met to organize the agricultur-

By JOHN H. PITTS
Agronomy '51

al clubs for the undertaking. It was decided that each of the professional clubs was to be responsible for a program depicting the work and progress made by the department of agriculture each represented. To the Fraternity of Alpha Zeta, National Agricultural Honor Society, was left the job of overall planning and organization. Among its jobs were the printing and posting of signs, general publicity, makeup and printing of programs and establishing an information booth during the fair. Alan B. Sibley, Jr., Chancellor of Alpha Zeta, became then, Chairman of the fair. Prof. B. E. Goodale, faculty member of Alpha Zeta, was chosen by the fraternity to serve as Adviser. By Nov. 4, the students

were ready to receive their visitors. Unfavorable weather conditions resulted in an unfortunate drop in expected attendance on Saturday, but those visitors present indicated a keen interest in observing these activities.

The Dairy Department, represented by the Dairy Club, held its exhibits in the Dairy Building. Oscar F. Lovelace served as Chairman and Prof. J. T. Lazar as Adviser of this program. A model dairy plant on exhibit was explained thoroughly to all visitors as were the other dairy displays. The Dairy Research Laboratories and Dairy Barns remained open for inspection.

Most of the exhibits were contained in Long Hall, the main agricultural building.

In the basement were the poultry exhibits which were adequately explained to the visitors. Egg grading, chicks hatching, de-beaking, chemical caponizing, refrigeration of poultry products—all of these went into the making up of the poultry program headed by Robert T. Miller as Chairman and Prof. C. L. Morgan, Adviser, both representing the Poultry Department and Poultry Club.

The Agricultural Engineering Department, represented by the American Society of Agricultural Engineering, also offered an extensive show, including farm machinery, drainage and irrigation, rural electrification and a large sand table exhibit clearly contrasting good and bad soil conservation. Hal E. Bland and Prof. A. W. Snell were Chairman and Adviser respectively.

On the second floor were found the Botany and Bacteriology exhibits. Hans F. Paul, Botany major, was Chairman, and Dr. G. M. Armstrong was Adviser. Microscopes were set up in order that visitors



Reed Horton and date observe Agronomy exhibits

HIGHLIGHTS HOMECOMING

could view our infinitesimal plant world.

Robert E. Farmer, Chairman, and Dr. Kaloman Lehotsky, Adviser, guided the forestry program to a successful presentation by providing a variety of exhibits. Forest protection, care and management were stressed.

The Entomology and Zoology exhibits with Albert C. White as Chairman and Dr. Farrar as Adviser proved to be quite unusual. Exhibits on agriculture, bee-keeping, and aquarium shows were before the public. Visitors were able to witness the heartbeat of a turtle several hours after the turtle had been dissected and apparently killed. These indicate the nature of the show.

On the wall leading up to the third floor was a graph which extended right up the stairs, depicting the rise of the cost of living. At the top of the stairs were the agricultural economics and rural sociology exhibits. Signs, graphs, balances, peep shows and other clever ways of presenting basic economic principals were displayed. Theiron D. Wilson, Chair-



Bill Allen demonstrates Kyeldahl method for nitrogen determination.



Judging Team fits animals for display

man, and Mr. J. F. Miles, Adviser, teamed up to present this unusual program.

Fred D. Sease, Chairman, and Dr. G. H. Collings, Adviser, directed the Agronomy Club in putting on its show, which covered a wide range of subjects. Soil, plant and fertilizer exhibits and demonstrations by agronomy seniors aided visitors in understanding the program.

The Animal Husbandry Department headed by Winston H. Sibley, Chairman, and Prof. R. R. Ritchie, Adviser, organized the Block and Bridle Club to present features of Animal Husbandry. Movies were shown on the meat packing industry and exhibits were demonstrated on slaughtering, processing, and packing of meat.

The dairy and animal husbandry students collaborated to present a cattle show Sunday afternoon of the fair. The Dairy Department presented the various breeds of cattle, and prizes were given for judging, showmanship and fitting of animals. The A.H. Program featured cattle, hog and sheep shows. These animal shows drew wide attention from the visitors.

The Future Farmers of America

Club, representing the School of Vocational Agricultural Education, presented its exhibits in the Education Building. Raymond L. Boozer, Chairman, and Prof. J. B. Monroe, Adviser, directed the program, which included slides, charts and demonstrations to show the scope of the agricultural teaching profession.

Last, but by no means least, the Horticulture Department, represented by the Horticulture Club, also provided entertainment. The exhibits ranged from landscape design to plant breeding work. The entire greenhouse was open for inspection, and the program included vegetables, fruits, nuts and small fruits. Food preservation was also presented.

As can be readily seen from the few exhibits listed above, the Agricultural Fair was quite extensive. Now that the fair is over the students can again return to regular schedules which the fair interrupted. Two years will elapse before the School of Agriculture sponsors another fair. The students and faculty will again make every effort to fulfill their opening invitation presented on the program, and it is hoped that all visitors will return in the future years.

Ag School Gridiron Stars

FRED CONE, Fullback

V. A. E. '51 Elmore, Ala.



BILL GRIGSBY, Tackle

V. A. E. '51 Saluda, S. C.



JACK BRUNSON, Center

A. H. '51 Sumter, S. C.



Pave Way To Orange Bowl

RAY MATHEWS, Halfback

Dairy '51 McKeesport, Pa. →



BOB PATTON, Tackle

← V. A. E. '52 Gray Court, S. C.



WYNDIE WYNDHAM, Q. B.

A. H. '51 Moncks Corner, S. C. →





Grain Sorghams -- Dry Weather Insurance

By **ALAN B. SIBLEY**
Agronomy '51

All agriculturists realize that the business of farming is different from other businesses in one respect. Most efficient business managers, such as industry possesses, can foretell to an accurate degree what the output for the year will be. They can accomplish this because they have almost complete control over all of the factors relating to production. The farmer, however, does not possess this almost unlimited control, for who can say what the weather will do, and what farm output will be? No one can control weather, but an efficient farmer will look for crops which make a good showing against adverse weather conditions, crops which give yields the minimum of which, at least, can be estimated in advance. Thus, he can then make his plans accordingly.

Looking at crops from this requirement, we recognize one that can be counted on never to fail entirely. This crop is grain sorghum, a crop almost comparable to corn in yield during normal seasons and which outyields corn during dry seasons.

Grain sorghums are not by any means new, but their importance as grain and forage crops in the south is new, and they are becoming more important. They have served as an important source of feed for livestock in the southwestern states for many years, and their dry-weather insurance is beginning to be appreciated here.

Corn is still rated as the greatest livestock feed; therefore, why should

anyone contemplate using grain sorghums as a substitute for it? Farmers in South Carolina are turning to grain sorghums because low average yields and increasing demand for livestock feed do not go hand in hand, and grain sorghums are very profitably grown on good cotton and corn land.

Corn under very favorable conditions will outyield and be more profitable than grain sorghums. A farmer would do well to plant corn if he could predict a favorable season. Surprisingly enough, however, the yield of grain sorghums is not affected very greatly by rainfall; thus, it is a consistent yielder. It can be counted on ahead of season to produce grain which may be the necessary part of a livestock program.

Anyone who possesses an ordinary grain combine should at least consider planting sorghums for livestock feed. The dwarf varieties, such as Caprock and Plainsman, although lower yielders than the taller varieties, are becoming increasingly popular due to the fact that their size allows them to be combined. Combining saves labor which compensates for the slight advantage in yield of the taller varieties. Combining sorghum has definite advantage over cutting the taller varieties by hand and pulling corn.

Sorghum grain is estimated to be worth about 90% of the relative feeding value of corn. It is slightly higher than corn in digestible protein and slightly lower in fat. Corn is more palatable than grain sorghum, but this does not mean that grain sorghum is unpalatable.

Sorghum makes a palatable forage crop especially when planted with velvet beans. The combination provides excellent grazing in November and December.

The Clemson Extension workers recommend the following program for raising grain sorghums: Plant sorghums in late June or early July, in order that the heads will be ripe for harvesting during October, a month of light rainfall. Plant the grain in 36 to 42 inch rows spaced 6 to 10 inches in the row—all of which adds up to 6 pounds per acre of planting seed. Treat the seeds with Ceresan. Two or three cultivations are necessary and should follow the procedure for cultivating corn. Harvesting of the dwarf varieties should be done when the heads are fully mature. Too much moisture during storage will make for heating and spoilage.

As stated before, the larger varieties may be harvested by hand, cutting off the heads and separating in a threshing machine. Grain threshers are sometimes used, and sometimes the sorghum is cut and shocked in the field and later stored for

(continue on page 32)

HORMONIZED CHICKENS

Chemical Synthetics Offer Hope For Practical Caponization

By **BOB MILLER '51**
Poultry '51

Hormones have created considerable interest among poultry men. Some reports have indicated that these compounds will increase the growth rate of chicks, maintain higher egg production in old hens, hasten maturity in turkeys and improve the appearance and market grade of broilers. Experimental evidence is available to justify some of these claims, but for others, contradictory results have been reported.

Hormones are chemical regulators produced by the ductless or endocrine glands and are distributed to various organs by the blood. The different hormones serve as a check on one another and may perform more than one function. Due to these processes, the body is kept in balance and the behavior is normal to the species and sex.

The pituitary gland, master gland so to speak, is located at the base of the brain. It regulates many other hormones in various other parts of the body. For example, laying hens need a 12-14 hour day for top egg production. The spring flush in egg production is due in part to increased length of day. The active light rays penetrate the eye and stimulate the pituitary gland which influences the ovary to increase egg production. In the same manner, artificial lights during the short days of the fall and winter have been used to increase egg production in hens and to start egg production in turkey breeders.

EDITOR'S NOTE: Care must be taken when consuming birds which have been fed, or have been injected with diethylstilbestrol. Some reports indicate human sterility may occur if humans eat a bird that has undissolved diethylstilbestrol in its carcass

The naturally occurring estrogenic (female) hormones produce the physiological change associated with maturity in pullets. These hormones cause the oviduct to develop rapidly and to increase the deposition of fat under the skin, in the abdomen and within the muscle fibers as the hen nears sexual maturity. This layer of fat under the skin greatly improves the appearance and market grades of pullets. However, the estrogens produced by the ovary are too expensive to use for improving market grades of poultry.

Organic chemists found a compound whose derivatives produce effects similar to the natural estrogens when injected. One of these compounds was diethylstilbestrol, and, when injected into cockerels and old birds, was found to feminize them. The roosters stopped crowing, began to "sing" and took on female characteristics. The pelvic bones of the male birds began to spread, the vent became moist and enlarged, the skin became soft and pliable and the feather pattern changed to that of the female.

The estrogenic hormones should be of greatest use in fattening and finishing male fowls. The treatment should be useful for broilers of both sexes since they ordinarily grow too quickly to accumulate much fat.

Diethylstilbestrol, however, is far more effective when injected than when given in the feed. Since the beneficial effects of this compound depends upon its concentration in the blood stream, the best way of applying it is to make the compound

into pellets which delay its immediate absorption.

The use of pellets of diethylstilbestrol for fattening poultry is permitted by the Food and Drug Administration and several commercial companies have made these pellets available with an implanter or metal band for implanting them under the skin of broiler and old males. A single pellet weighing 15 milligrams is sufficient to produce the maximum feminization in a broiler within a four-week fattening period.

An experiment using thiouracil, a synthetic substance to reduce the effectiveness of the thyroid gland, along with stilbestrol gave the following data:

Thiouracil or stilbestrol alone consistently improved carcass quality, but the combination of these two substances was superior to either administered separately.

Fat deposition and dressing percentage were increased by all experimental treatments and protein and moisture were decreased.

Comb area and testis weight were reduced by all treatments. Stilbestrol alone or in combination with thioracil produced maximum testis inhibition. Thyroid weight was not affected by stilbestrol alone but was increased by thiouracil; maximum thyroid size was produced by the combination treatment.

In these experiments it appears that maximum gain, efficiency of feed utilization and market quality are obtained when a 6 mg. pellet of stilbestrol is administered in combination with 0.15 per cent thiouracil in the ration from the ninth to twelfth weeks of age.



BETWEEN



Pictured above are the new initiates of Alpha Zeta

ALPHA ZETA TAPS THIRTEEN

The Clemson Chapter of Alpha Zeta, national honorary agricultural fraternity, tapped thirteen new members and held its final initiation on November 2. Candidates for membership are selected on the basis of scholarship, character, and potential leadership. The new members are: Thomas W. Culp, Agronomy senior, Fort Mill, S. C.; Claud M. Inman, A.H. senior, York, S. C.; Marion W. Livingston, A.H. senior, North, S. C.; Earle W. Moore, Entomology senior, Westminster, S. C.; Raymond E. Moore, A.H. junior, Duncan, S. C.

Also Lee M. Rea, VAE junior, Matthew, N. C.; David E. Small, VAE senior, Davidson, N. C.; Robert H. Steele, Ag. Economics senior, Bear Popular, N. C.; Albert C. White, Entomology senior, Chester, S. C.; D. B. Williams, Jr., Ag. Economics senior, Landrum, S. C.; George E. Wolfe, VAE, senior, Inman, S. C.; Millis B. Wright, Agronomy junior, Fairbluff, N. C.; and John W. Smith, Horticulture senior, Lancaster, S. C.

Officers of the fraternity include: Alan B. Sibley, Chancellor; Robert M. Prince, Scribe; Winston H. Sibley, Treasurer; and Wyndham Manning, Chronicer.

McGINTY ILL

Mr. R. A. McGinty, Vice-Director of the South Carolina Experiment Station has returned to his home at Clemson after undergoing an operation in Atlanta, Georgia.

DR. COLLINGS HONORED

Dr. Gilbeart H. Collings, Professor of Soils and Agronomy, was elected a Fellow of The American Society of Agronomy during its convention earlier this month. This honor is based on outstanding contributions in the field of crop and soil science, and service to the Society. Dr. Collings, who has been at Clemson since 1918, was recognized for his ability as an educator and author in the field of soil fertility, plant nutrition, and the use of commercial fertilizers. For the past several years he has also been consulting editor for a series of college text books.

NEW MEMBERS ADDED TO AG. FACULTY

Six new instructors and three laboratory assistants have been added to the faculty of the School of Agriculture. They include J. O. Hammons, Assistant Professor of Agronomy; Dr. R. I. Jackson, Associate Professor of Agronomy; E. M. Rallings, Assistant Professor of Agronomy; and C. H. Strickland. The Entomology Department has added Miss Eugenia Inez McDaniel, and Harvey H. Wheless. The three newly added lab assistants are: Miss Betty Bagwell, General Botany lab; Miss Marian Graham, Bacteriology lab; and J. D. Boykin, General Zoology and Entomology lab.

AG. ENGINEERING BUILDING SHAPES UP

The modern Ag. Engineering building complete with radiant heat, glass doors, and farm machinery display room is nearing completion to help give Clemson its "new look". The quarter-of-a-million dollar structure will also have an auditorium with a seating capacity of two hundred, fluorescent lighting, and a tractor lab with a round turn table. The Department plans to move to its new location in February.

AG. 'PROFS' LEAVE FOR GRAD SCHOOL

Professor C. M. (Champ) Jones and Professor J. M. (Jeep) Jones have both been granted leave of absence to complete work on their Doctorates at Cornell University.

FURROWS



AGRARIAN MAKES STAFF CHANGES

Hans F. Paul, Botany senior of Charleston has been named Assistant Editor of the Agrarian, replacing James E. Cushman, resigned. Harry M. Lightsey, agronomy junior of Columbia has been named Managing Editor. New additions to the staff include: Robert T. Ward, Ag. Economics junior of Clemson; Raymond E. Cox, A.H. junior of Yorges Island; A. C. White, Entomology senior of Chester; Jack L. Sims, Horticulture senior of Orangeburg; Robt. E. Farmer, Pre-Forestry sophomore of Sevierville, Tennessee; Jack Trimmier, Jr., A.H. sophomore of Bedford, Pennsylvania; J. W. O'Cain, Horticulture freshman of Orangeburg; H. H. Flowers, Pre-Vet. freshman of Lancaster and Robert Miller, Poultry senior of Atlanta, Georgia.

JUDGING TEAM WINS HONORS

The Clemson Block and Bridle Livestock Judging Team has recently completed trips to the Southern Livestock Judging contest in Memphis, Tennessee, the Southeastern Livestock Judging contest in Atlanta, Ga., and the Eastern National Livestock show in Baltimore, Maryland.

In Memphis the Clemson team came in fifth following Mississippi, Tennessee, Louisiana, and Kentucky.

In Atlanta, the team placed third with Florida and Louisiana placing first and second respectively. Several men did exceptionally well in the individual classes. George H. Liebenrood placed second in hog judging. Bob Johnson placed second on Hereford cattle and Winston Sibley was second on Angus cattle and third on Hereford cattle. Frank Flowers was fifth highest man in the entire contest.

At Baltimore, Flowers was high man in the hog judging contest. Clemson placed fifth in the entire contest of fourteen teams.

Members of the Clemson team are: Frank Flowers, Winston Sibley, Bob Johnson, Billy Patton, George Liebenrood and Bill Schwiars.



Bob Miller is shown draining the punch pail at the Freshman Reception

FRESHMAN RECEPTION

On September 8, during freshman orientation week, the Ag. Council of Club Presidents entertained the new freshman entering the School of Agriculture with an orientation and reception.

The President or his representative for each departmental professional organization made a short talk telling the new men what his respective department had to offer in the field of agriculture. After the talks by the student leaders, Mr. R. A. McGinty made a short welcoming address and introduced the faculty members present.

Following the orientation program, refreshments were served and a fellowship hour was enjoyed.

Alan B. Sibley, Chancellor of Alpha Zeta presided at the orientation.

AGRONOMY CLUB ELECTS OFFICERS

During a September meeting of Kappa Alpha Sigma, the Clemson chapter of the American Society of Agronomy, officers for the year were elected. The newly named officers are: Bill Brabham, President; Rupert Kinard, Vice President; A. B. Sibley, Secretary; J. S. Ulmer, Treasurer and C. P. Hamer, Parliamentarian.

TOMATOES FIGHT BACK

Resistant Varieties and Good Management Lessens Parasite Damage

In 1781, when tomatoes were first introduced to this country, tomato diseases were no problem. The few varieties planted then had been brought from England and France, and were grown only in home gardens. Now tomatoes are grown on more than 800,000 acres in the United States and the crop is valued at about 170 million dollars.

At the turn of the century, the commercial tomato industry was concentrated in definite regions. The severity of tomato diseases was continually increasing, until they became as serious as they are today. As far back as 1915, the Department of Agriculture recognized the fact that the control of tomato diseases had become a serious and national problem. A project for breeding disease-resistant varieties was begun, and the first consequential disease encountered was Fusarium wilt. This disease, one of the most prevalent and dangerous diseases of tomatoes, is caused by a soil-infesting fungus which can live for long periods of time in the soil. During the next ten years, a series of wilt-tolerant varieties enabled growers to produce profitable crops on soils slightly infested with the fungus. The control of fusarium wilt is somewhat effective with rotation. Yet, in warm soils and temperatures, the disease remains active; and, due to the expansion of the crop, the gradual infestation of more soil areas and the natural development of more virulent races of fusarium wilt, the dis-

By H. F. PAUL
Botany '51

ease has become more difficult to control. Field sanitation is a recommended control, but is not very successful because often the measures are not properly applied. The use of resistant varieties such as Marglobe, Pritchard, and Rutgers is urged. The Marglobe is the main tomato used for canning. Presently, the planting of resistant varieties is the best preventative for fusarium wilt; however, there are many other diseases to consider.

Another of the most serious tomato diseases is Early blight, also caused by a fungus. This disease occurs in most tomato-growing regions and is one of the most common and serious diseases of the crop. This disease first affects the young seedling, defoliating the leaves and ruining the fruit. This organism causes the same disease on egg-plants and Irish potatoes. The organism ideally survives on, or in, soil that contains decayed plant tissue, on which it is parasitic. The favorable climatic conditions are high humidity and a temperature of around 75 degrees Fahrenheit. Since the disease is soil-borne, a great many planters make their mistake by crowding plants into the seed bed. Poorly nourished plants seem to be more susceptible to diseases.

A large scale breeding program was started in order to get some variety

that is resistant to early blight. One variety, Southland, developed by Mr. C. F. Andrus of The Regional Vegetable Breeding Laboratory, Charleston, S. C., is now used as the resistant variety.

Tomatoes, one of the Nation's most valuable vegetable crops, is highly nutritional because of its vitamin contribution. Diseases of this crop deprive the nation of large quantities of food, but also waste many man-hours of labor.

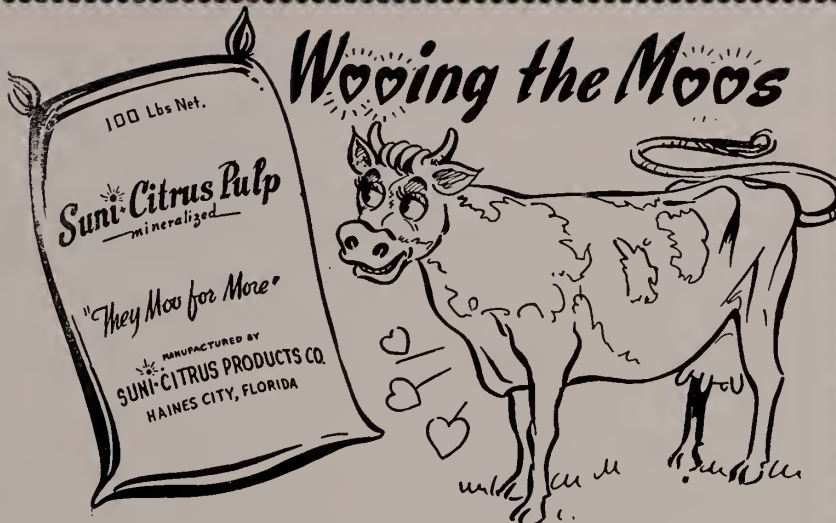
Loss and waste in the tomato industry can be avoided only when the diseases that cause them are understood and effectively combatted. The Department of Agriculture has published a bulletin entirely on tomato diseases.

Tomato diseases are caused by fungi, bacteria, viruses and unfavorable soil conditions. Diseased plants cannot be cured, but it is often possible to prevent infection. The most effective and economical method of growing healthy tomatoes is to use resistant varieties; but, as varieties resistant to most diseases are not available at present, growers must depend upon other methods of reducing losses.

Prevention of disease in the seedbed is particularly important, since the losses from diseases are likely to be less severe if disease-free tomato plants can be set in the field. When chemical treatment is used and the seed is planted in healthy soil, a crop of healthy seedlings usually results. These practices, combined with crop rotation, clean culture and the proper use of fungicides, are the best safeguards against loss from disease.

Suni Citrus Pulp
is popular with
progressive
Dairymen
because . .

1. IT is an excellent cattle conditioner.
2. IT will take the place of BEET PULP.
3. IT has a tonic effect upon the animal.
4. IT will produce good milk flavor.
5. IT is a bulky and succulent feed.
6. IT contains 1520 pounds of digestible feed per ton — therefore a cheap source of digestible nutrients.



Cows Love Suni Citrus Pulp

Suni-Citrus is rich in milk-making units, brimming with bovine health and happiness. That's why—

"They Moo For More"

Suni Citrus Products Co

HAINES CITY, FLORIDA

Sales Agent: ASHCRAFT-WILKINSON COMPANY, ATLANTA, GEORGIA

L. C. MARTIN DRUG COMPANY

THE OFFICIAL COLLEGE BOOK AND SUPPLY STORE



SERVING CLEMSON STUDENTS SINCE 1908



Clemson

South Carolina

Agrarian Philosophy

By

The Editor

Bells and Clocks

We all want our money's worth, but when it comes to being kept in class five minutes overtime, we usually don't want any more than what we bargained for. With our campus growing by leaps and bounds in all directions, it gets to be quite a hike between classes sometimes. When you are held five minutes overtime in class, it frequently makes you late for your next class. The professor doesn't keep us in class after the hour on purpose; it's just that he doesn't have any signal to end the class, since you can't hear the guard room bell in most of the buildings.

Why couldn't we have a synchronous buzzer system connected to all the buildings on the campus? We could have a bell or buzzer on each hall of every building which would be automatically controlled. The cost for such a project would be minor, and it would greatly increase class attendance efficiency.

Another thing, why doesn't someone either fix or wind up the clocks in Long Hall? For the past four years it has been twenty past two by the clock on the third floor.

We and The Atom

Today, standing at the brink of another world war, we at Clemson are certainly aware of the fact that we may soon be swapping our cadet blues for army O.D.'s.

Since the news that our leaders may decide to use the atomic bomb in Korea, many of us have pondered the big question, "Should we use the A-bomb?" You might wonder, "who are we to be deciding such a question?" Well, we are just part of the people, but the people should have a say in matters such as this.

Our answer is **NO!**, let's not use the A-bomb in Korea or elsewhere. War can't be polite, but there must be a mutual understanding between warring nations of just how humane the conflict will be. The way we see it, is that if we use the atomic bomb in Korea, it would be an open invitation for war with Russia. If Russia has the A-bomb, which is highly possible, she could paralyze American industry by wiping out six of our major industrial cities within twenty-four hours after we bomb Korea. Russia has a tremendous stockpile of arms, yet a comparatively small industrial potential, while we have a small stockpile, but a vast industrial potential. A quick war would be the only way for Russia to win; that is attack us before we build up our arms and manpower, and before their stockpile is exhausted.

In these critical times we must reconvert America into another arsenal of democracy. We must hold our American industrial potential at all costs, so let's forget the A-bomb for awhile.

Since



1845

This trademark is your guarantee
of highest quality in meats!

Kingan's
R E L I A B L E

Beef - Veal - Pork - Ham

Tender Smoked Hams

Self-Service Luncheon Meats

Tasti-Cooked Hams

Canned Meat Products

Fresh and Smoked Sausage

Lard and Shortening

Sliced or Slab Bacon

U. S. GOVERNMENT INSPECTED

When you buy Kingan's . . . You buy the best!

BUYERS and PROCESSORS
of LIVESTOCK

Kingan & Co.

ORANGEBURG, SOUTH CAROLINA

Main Plant and General Offices: Indianapolis, Indiana

A MAN; A DARE; A FELLOWSHIP (continued from page 7)

counts of tours to the Merchant's Exchange Building, to an egg marketing company, and to an advertising agency. There were a few pages of notes on the day we spent at the Swift & Company packing plant, describing the meat packing industry from actual transactions between commission men and buyers to the shining carcasses and cellophane-wrapped meats that eventually find their way into the butcher's windows and onto the housewife's table. I licked my thumb and flipped right through a tour of the Ralston Purina plant, the St. Louis Zoo, and the research laboratories of the company, and several excellent lectures on Purina organization, job getting, personnel training, and Ralston Purina Cereals.

On the last page of my notes was a brief account of our banquet, held at Garavelli's Italian Restaurant on August 11th, the day ending our two week stay in St. Louis. In the back of my book was a scrapbook affair filled with pictures and souvenirs. I took special notice of the group picture taken of us all, and the faces

were those of the finest group of boys I had ever met.

I closed the book and held the checkered thing out—it must have weighed four pounds and was an inch and a half thick. How we could have done so much in two weeks was hard to understand; and also, we had published a 65 page **Danforth Grist Mill**, telling about the Fellowship and the boys who comprised it.

All this thought on the first half of my fellowship made me remember how I had looked forward to the second two weeks at camp. "Miniwanca is enchanting in summer,—" the folder had said—and it had been, with the sunset-red waves of Lake Michigan dashing to meet the gigantic white dunes.

The milk truck ran into some rough pavement and jarred me from Michigan back into the Tennessee hills, but a road junction, smooth pavement, and the drone of the engine soon lulled me back to Miniwanca. Yeah, Miniwanca had been great, first to last. There had been Mr. Danforth, standing in front of the lodge

to greet us in a green checkerboard shirt and a red checkerboard tie; and I remembered how I had enjoyed the Life's Essentials class that he led, inviting big men like Mr. Joseph B. Hall, President of Kroger Stores, Mr. Orman Hunt, a director of General Motors, and Mr. Dan F. Gerber, founder of Gerber Baby Products Co., to speak to us.

During my stay at Camp Miniwanca, I had heard lectures on religion, philosophy, and ethics, taught by American, Chinese, and Indian philosophers — big men, and leaders throughout the world.

The open-air tent life, the intramural sports, and the track meet had rounded out the physical part of the program. In fact, the whole theme of the camp had been to balance the physical, mental, social, and religious parts of our times.

The big milk truck swung around a curve, almost throwing me off the milk rack. Turning around in the swivel driver's seat, "H. R." said, "Hey, wake up! we're almost in North Carolina, and it's your turn to drive this thing awhile.



CONNOR ELECTRIC CALF DEHORNER

designed
by

Clemson
Dairy
Department

MANUFACTURED
BY

PROGRESSIVE MACHINE WORKS -- ANDERSON, S.C.



THE MARK OF
QUALITY :- DEPENDABILITY :- SERVICE
FOR OVER 25 YEARS

Insecticides - Fungicides - Wood Preservatives
Weed Killers - Soil Fungants - Grain Fumigants

—
— FORMULATED TO MEET —
— EVERY NEED —

Dusts - Wettable Powders - Solutions - Liquids
Emulsifiable Concentrates - Emulsions

See Your Security Brand Dealer for Pest Control Problems.
The Answer Lies in the 150 Security Brand Products Used for

PEACHES	COTTON	CATTLE
APPLES	TOBACCO	HOGS
SMALL FRUITS	TRUCK CROPS	POULTRY
ORNAMENTALS	GARDEN	HOUSEHOLD

WOOLFOLK CHEMICAL WORKS, LTD.

MANUFACTURERS

FORT VALLEY, GA.

ESTONIAN TAKES A.H. AT CLEMSON

Quite a few students from other countries have studied at Clemson in the past few years. In this column I would like to introduce to you a student who comes from Estonia. He is 19 year old Jaan Kurgvel. Jaan arrived in the United States on the 19th of September of this year. He is attending Clemson on an Alpha Phi Omega scholarship.

Jaan's native country, Estonia, is situated at the outfall of the Finnish Gulf in the northern part of the continent of Europe. Estonia is bordered by Russia on the east and south. The area of the country is 29,546 square miles with a population of 1,126,413, averaging a density of 23.7 inhabitants per square mile. Among the natural resources of Estonia are oil, shale, dolomite, limestone, phosphorite, and gypsum. Climatically Estonia belongs to the moderately cool belt, summers being cooler and winters warmer than in the corresponding latitudes of Eastern Europe. Agriculture is by far the chief means

By **RAYMOND E. COX**
Animal Husbandry '52

of securing a livelihood in Estonia.

Jaan came to the United States from Germany, where he lived as a refugee or displaced person for almost six years. He left Estonia in September 1944 as the communist troops of USSR were to occupy his native country for the second time. Remembering the first occupation in 1940 to 1942 when the communists deported six percent of the total population of the country to Siberia in two days and nights, Jaan's family thought it better to flee. As there was only one country where they could go at this time, they had to accept this chance — although this country was Germany.

Jaan Kurgvel graduated from the Estonian Secondary School in Lubeck, British Zone of Germany, in December of 1949. Later he studied at the German University in Bonn for one semester, and then immigrated



Jaan Kurgvel

to the United States, having received the offer for a scholarship in Agriculture from the Clemson Alpha Phi Omega fraternity. Jaan is planning to major in Animal Husbandry and possibly return to Estonia, which has made great advances in cattle production in the past few years. His future plans depend a great deal upon the world situation.

SPARTAN GRAIN & MILL CO.

for more than 35 years

Manufacturers of

**SPARTAN QUALITY
FEEDS**

for Poultry

and Livestock

"The Home of Good Eats"

**SEIGLER'S
STEAK HOUSE**

Walhalla, South Carolina



CLEMSON MEN ALWAYS WELCOME

SERVING THE FARMERS
of
NORTH and SOUTH CAROLINA
SINCE
1906



PLANTERS
Fertilizer & Phosphate
Company

Charleston, S. C.

3-7267

Charlotte, N. C.

2-1086

TIMBER CRUISING

A Necessity for Good Forestry Management

By **R. M. FARMER**
Pre-Forestry

In any type of business in which goods are bought or sold, it is extremely important to know the quantity, quality, and variety of merchandise on hand at all times. This also holds true in the proper management of a forest. In order to make his forest profitable, the owner must know not only the identity and distribution of his trees, but also their size and quality. This enables the forester to harvest at the right time the trees demanded on the market.

One can readily see taking inventory in a forest is a tremendous undertaking when compared with the counting of goods in a store or other business. This process of taking stock, commonly called "timber cruising," requires much time and patience on the part of the forester;—but it pays off profitably in the end, for then he has the potential products of a forest at his fingertips.

Now, one might ask, just how is this "timber cruising" done. Are the trees simply counted and classified according to size and location, or does it involve more complicated work? To illustrate the process let us imagine that we have a large tract of timber which has never been managed. The first step in "cruising" this land consists of obtaining a map of the region. After this lines are drawn on it—usually north and south or east and west—along which sample plots and trees will be taken in the field. At the present, aerial photographs, which present a reliable picture of the area, and even enable one to tell where one type of timber ends and another begins, are used. A forested area that has uniformity of species, age, density, and rate of growth is called a stand. These stands are segregated and delineated on the aerial photograph with the

aid of a stereoscope. These stands must be located and sampled in the field. After the streams are located and drawn on, the map becomes ready for field work.

Then out to the woods we go to begin our work. We set up our compass at one end of our first line, which we shall say runs north and south. Then we stretch out our chain and start chaining along the line being careful to keep on the north-south meridian. After progressing four chains we stop to take the first sample plot. Taking a plot consists of tabulating the name and D.B.H. (dia. breast high) of every tree within one tenth of an acre. The chief of the crew stands in the center of the plot and the other members of the party circle around him calling out the information which he records on a special field sheet. Then the age, height, and merchantable height of a sample tree, usually one of the predominating species, is recorded. The crown density, ground cover, and regeneration are then noted as we prepare to chain on to the next plot.

Pulling the chain on a cruising can be a trying and sometimes amusing experience. The bearing, which creates the direction of the line to be chained, invariably goes through the thickest, most impenetrable part of the forest. If there is one small formidable patch of briars in twenty acres of woods, the line will always, without exception, run exactly through the center of it. Therefore the head chainman must either be a little fellow who can wiggle through without a scratch, or a big bruiser who can stamp out a super-highway for himself and the rest of

the crew with out getting tangled up.

Often before we have chained another four chains, we must move off to the left or right of the line in order to take a plot in a stand which is indicated on the aerial map, but is not crossed by the line of our bearing. This is called an off-set.

After the stands, intersected by or adjacent to the first line, are inventoried, we repeat the same operations on subsequent lines until the whole forest is cruised. Now the data assembled in the field must be evaluated and compiled in the office. First of all we calculate volume, using the basic data collected in the field. The volume of timber in each stand is determined in board feet, cubic feet, and cords while the volume of each species of tree and each forest type (hardwood, coniferous, etc.) is also calculated. Then height-age relationships are worked out by means of graphs. From this data we determine the rate of growth of each stand. Then the cuttery budget or annual cut, which is based on the several types of maps must be constructed, for without them the management of the forest would be impossible. The two indispensable ones consist of a map showing each stand, idle fields, cultivated fields, etc., and another one showing important physical features, e.g., contours, roads, trails, streams, and boundaries.

Having finished the maps, the calculations, and the tabulations, it can now be said that the area has been cruised. We know the location, quantity, quality, rate of growth, and type of the timber to be handled. The problem of how, when, and where to cut is partially solved, and the first step toward proper management is taken.



He's one of the Experts

behind this soil conservation picture

The farmer and his son did the work. The soil conservation service helped them make the plan. The farm equipment dealer made this new kind of farming convenient as well as practical.

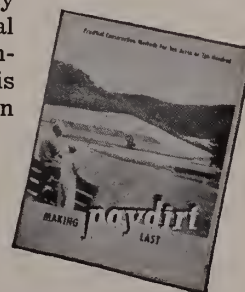
Without home-owned power farm equipment, perhaps none of it could have happened. Today we switch to conservation farming because it means a bigger income, and experience has proved that farmers will stay switched only if conservation farming is made convenient as well as profitable.

The farmer doesn't need to wait for or hire heavy earth-moving equipment for much of his soil conservation work. With his own tractor he can build terraces and grassed waterways, farm on the contour

and carry out other recommended practices. When he needs advice on how to operate or adjust his equipment, the farm equipment dealer is the best source of information. The dealer is one of the experts, too.

That's why Allis-Chalmers dealers have been supplied with a new soil conservation handbook, "Making Paydirt Last." It looks at soil conservation from the farmer's side of the fence — detailing practices for cropland, grassland and woodlot.

In company with the county agent, college soils man, vocational agriculture instructor and soil conservation service, the A-C dealer is becoming a recognized partner in the teaching of better farming.



ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

OPERATION POLLINATION

(continued from page 6)

ated by George Rea, a former Extension Professor of Beekeeping at Cornell University, will serve as a good illustration of the value of bees in apple pollination. One orchard owner on Lake Ontario had 50 acres of apple trees well interplanted with pollinating varieties but very little fruit was set each year. Two men investigating the problem found only eight individual insects in eleven days of collecting, indicating the lack of pollinators. The following year sixty colonies of bees were introduced into the orchard and the yield jumped from seven hundred and fifty bushels to thirty five thousand bushels. This is an increase of thirty-four thousand, two hundred and fifty bushels, or more than forty-five times the production before the bees were brought in. The case is the same for many other fruit crops.

The clovers, alfalfas, vetches, and many other hay and pasture crops are also dependant upon the honey

bee for pollination. An experiment conducted this past summer by Professor David Dunavan, Clemson Entomology Department, on the seed production of ladino clover in South Carolina yields some interesting and valuable information. The experiment was carried out in a Clemson pasture planted in ladino clover and fescue. Screened cages were used in the experiment. One was set up to give the enclosed clover a high proportion of bees working the blossoms, and to assure good pollination. This was arranged by removing the end piece from the bottom board of the hive thus allowing a similar opening at the front and back of the hive. This was then placed against the cage, thus allowing the bees free access to the clover in the cage and also allowing normal flight of the other field bees. (See Photo) Another cage was set up designed to keep out all insects, pollinators and otherwise. This prevented any insect activity on the blossoms, and any pollination which took place had to be either natural self pollination by the

blossom or wind pollination. A third plot of the same size was set up, but there was no cage over this area.

When the experiment was started all flower and seed heads were picked from the plots, so that all heads involved in the experiment were fresh, and had not been previously visited by some other insect. At the end of the experiment 50 seed heads were gathered from each plot and were carefully threshed out to obtain all seed from each fifty heads. The following figures are the average of the plot and its replication. The heads from the plot in which insects were excluded yielded one hundred and thirty-six seed for fifty seed heads, the open pollinated plot yielded three thousand, six hundred and thirty-two seed per fifty heads, and the plots with bees only gave a yield of four thousand, four hundred and ninety-three seed from fifty heads. The results of this experiment are very satisfying and prove that the honey bee is necessary for ladino clover seed production.

PENDLETON FERTILIZERS

MADE BY

Pendleton Oil Mill

PENDLETON, SOUTH CAROLINA

LIKE TO STUDY ABROAD NEXT SUMMER?

You can earn full credits on an all-expense,
university-sponsored study tour via TWA

Now's the time to start planning for one of the most interesting and profitable summers you've ever spent... sightseeing and studying in Europe while you earn full university credits. Again in 1951, TWA will participate in the tours that proved so popular for the past two years... in cooperation

with the "Institute of University Studies Abroad." And you'll have a chance to learn at first-hand the new concept of air-age geography... traveling by luxurious TWA Skyliner. Remember, half your time will be devoted to touring Europe and the other half in residence study as indicated below.

Look at this list of study-tours being planned for next summer (from four to nine weeks abroad), and check the ones that interest you:

- ☐ **SWITZERLAND** ☐ University of Geneva
- ☐ University of Zurich, School for European Studies
- ☐ University of Loussonne
- ☐ Fribourg Catholic University
- ☐ **FRANCE** Sorbonne (Paris) ☐ Lille (at Boulogne-sur-Mer) or
- ☐ Toulouse (at Nice)
- ☐ **AUSTRIA** University of Salzburg
- ☐ **BRITISH ISLES AND IRELAND** Study at various universities
- ☐ **SPAIN** Madrid and Barcelona
- ☐ **ITALY** Florence and Siena
- ☐ **GENERAL EUROPEAN** Study and Travel Tours
- ☐ **INDIA** "India and Problems of the Orient," including Cairo visit, a 6-week tour leaving in January, 1951.

Across the U.S. and overseas...
you can depend on **TWA**

John H. Furbay, Ph.D., Director TWA Air World Education Service,
80 East 42nd St., New York 17, N. Y.

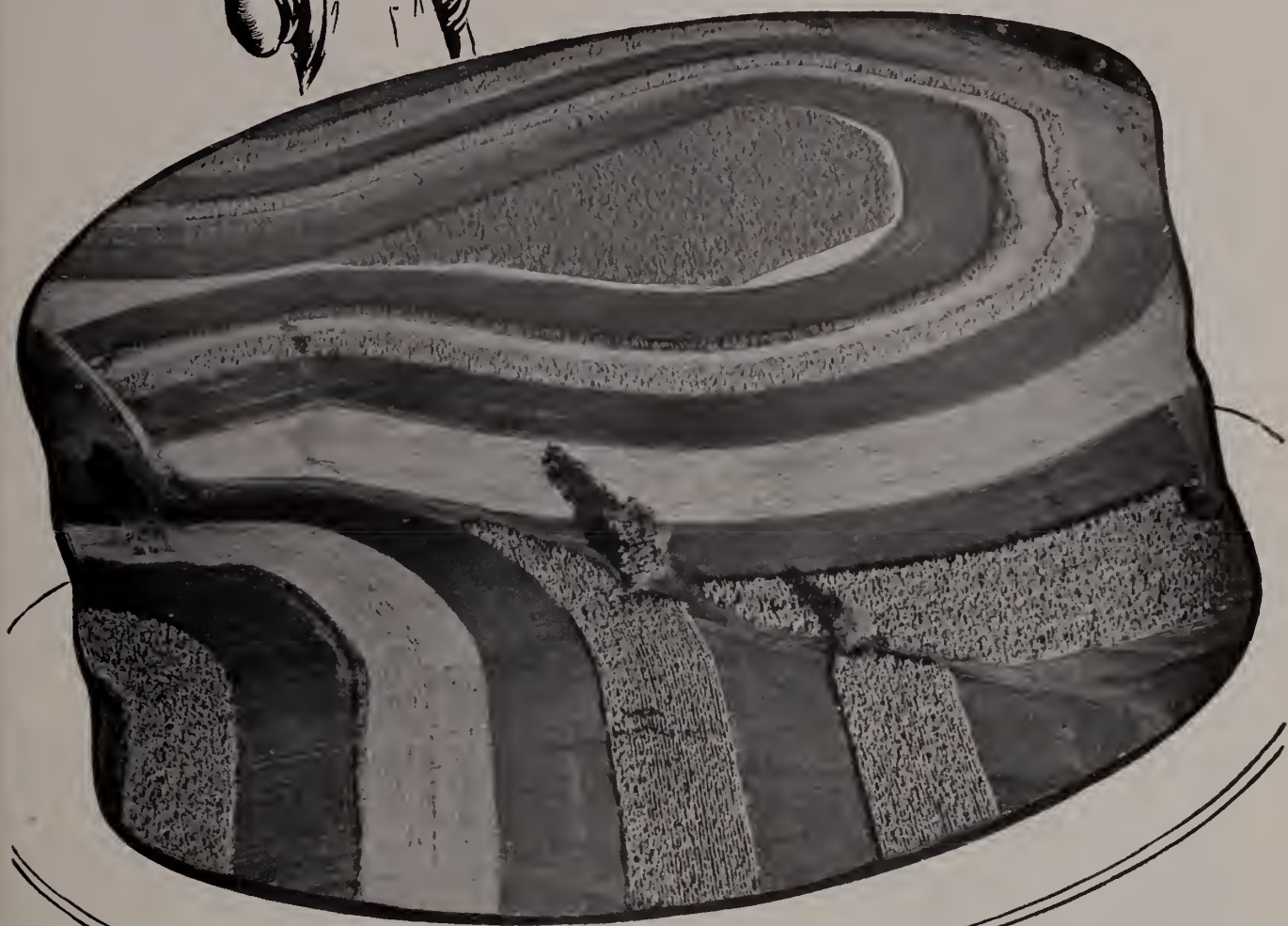
Please put me on your list to receive detailed information about study tours via TWA indicated above, to be sent as soon as available.

Name _____ Position _____
Address _____
City _____ Zone _____ State _____ Phone No. _____

C-11

Farmers

can eat their cake



...and have it, too!

Yes, modern conservation practices soon begin to repay their cost—enable farmers to eat their cake and have it, too. Controlling erosion helps to hold precious topsoil on the land and, at the same time, hoists farming profits.

Contouring, terracing, strip-cropping, and other soil-saving operations, which can be practiced with regular John Deere farm equipment, mend mismanaged or erosion-scarred land. Grasses and legumes, together with agricultural limestone and commercial fertilizers, rebuild soil productivity

in a hurry. This double-barreled program, recommended by agricultural authorities, enables soil conservation farmers to improve their places and, at the same time, raise bigger yields and enjoy better incomes than ever before.

Soil conservation, however, is more than a remedy for ailing acres or a recipe for bigger profits. It's a gilt-edged investment in America. By making our agriculture more stable and productive, modern soil conservation practices help to maintain our economic well-being and safeguard our national security.

J O H N D E E R E



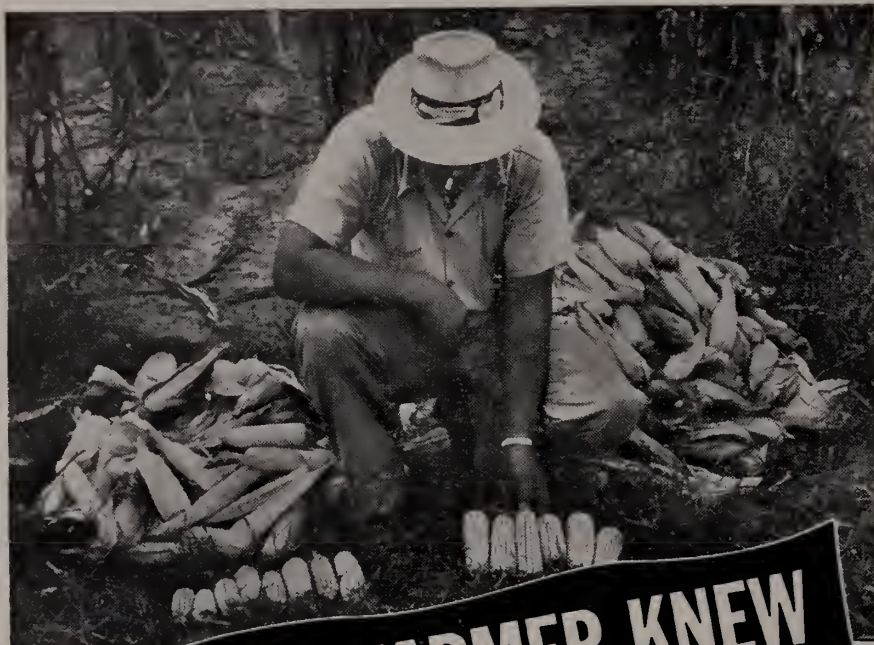
M O L I N E, I L L.

He only needs one drink to calm himself,

His steadiness to improve.
(Last night he got so steady,
He couldn't even move)

He: We sure had a good time last night for only fifteen cents.

Girl: Yes, and I wonder how my little brother spent it.



IF EVERY FARMER KNEW The Full Value of Inoculated Legumes

*ABOVE: Comparative yield from two 250-foot rows—nubbins on left did not have benefit of inoculated cover crop.

The bigger yields of clovers, alfalfa, soybeans and lespedeza you get from inoculation is not your only benefit. Inoculation with NITRAGIN helps these and other legumes but it helps boost yields of other cash crops, too. The Georgia farmer pictured above reaped 56.3 extra bushels of higher quality corn from a test acre that followed an inoculated legume cover crop. The pile on the right easily shows the extra benefits of inoculating all legume crops, whether they are used for hay, seed, or soil-building. For best results with legumes, always use NITRAGIN . . . the inoculant in the orange-colored can.

*Name of farmer on request



THE NITRAGIN COMPANY, INC.
3929 NORTH BOOTH STREET • MILWAUKEE, WIS.

AROMATIC TOBACCO .

(continued from page 9)

the rows of plants and followed by one furrow with a small subsoil plow in the middle of the row. The second cultivation is carried on mainly to control weeds and to loosen the soil in order to get better aeration. In general, very little cultivation is required during most seasons.

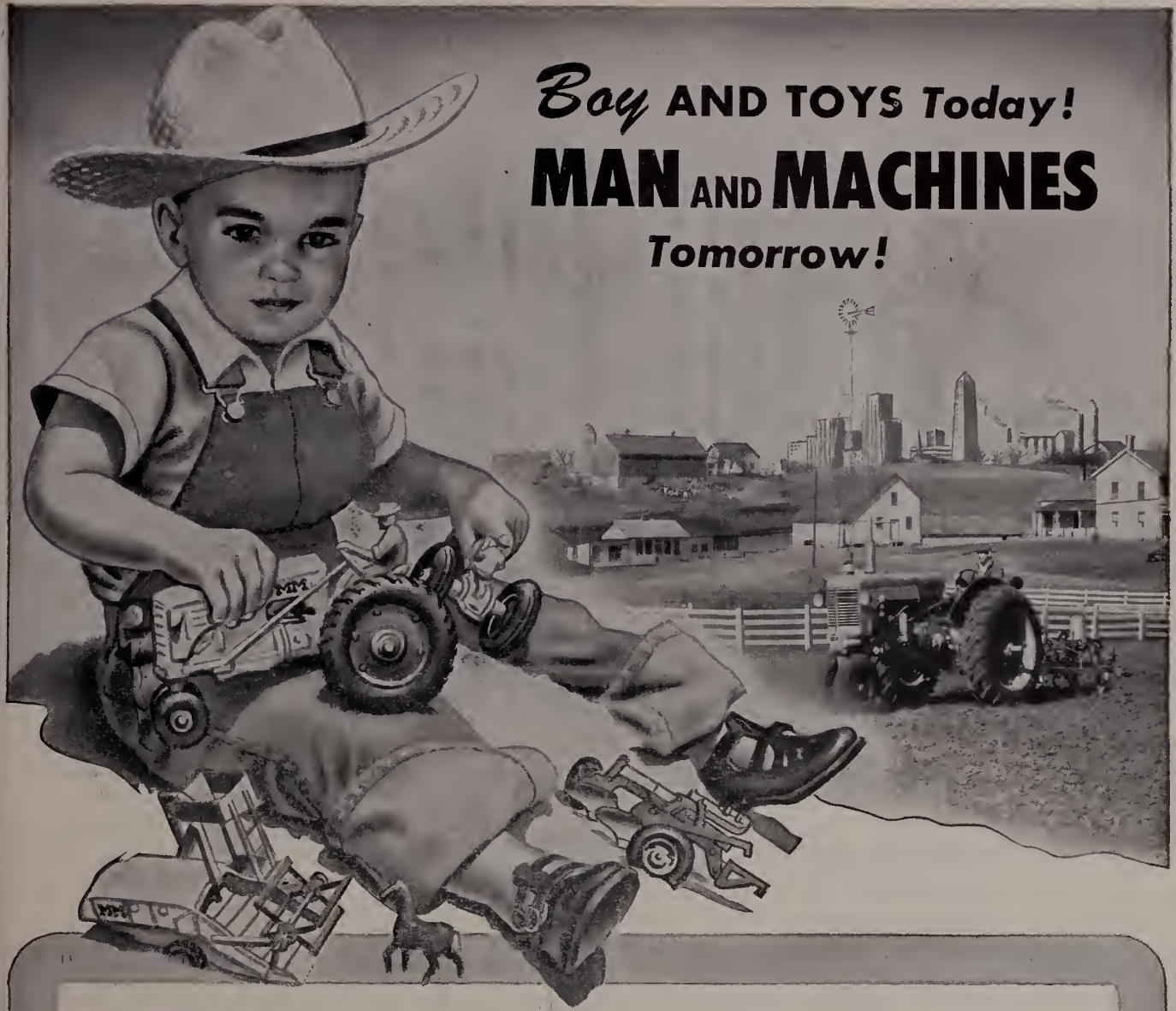
The first priming begins 40 to 45 days after transplanting. For maximum yield and quality, leaves are harvested when they are quite green. Leaves showing yellow or any burning will be of light weight and poor quality. Priming should be done early in the morning before the dew on the leaves has dried.

Leaves are then strung on a string by the use of a 14-inch needle and then tied on a wood or bamboo stick. As soon as the leaves are properly arranged on the string, they are placed in a cool and shady place on racks so that the tobacco can yellow and wilt, which will take from 36 to 72 hours. After wilting, the tobacco is placed on portable racks on casters and placed in the barn for curing by the sun-heat method.

Approximately 700 square feet of white sand or concrete should be close to the opening of the shed for use as a runway for curing in the sun. This place should be dry and free of grass and weeds, as vegetation causes a higher humidity and, consequently, delays curing of the tobacco.

As soon as the tobacco crop is properly cured, it is baled for delivery to the Southeastern Aromatic Tobacco Company in Anderson, South Carolina. This company is the sole buyer of all aromatic tobacco produced in five states. Each bale offered for sale is graded individually, and the price is determined according to the grade. All growers of aromatic tobacco are guaranteed a minimum average price of 85 cents per pound for all usable tobacco. Most growers average 85 cents per pound, and the highest price is \$1.25 per pound. Yields range from 600 to 2000 pounds per acre, the average being 1000 to 1200 pounds.

Aromatic tobacco is susceptible to disease and insects, such as blue mold, flea beetle, budworm, hornworm, and nematodes. These diseases and insects are controlled in the same manner as in raising flue-cured tobacco.



Boy AND TOYS Today! **MAN** AND **MACHINES** Tomorrow!

This little fellow says emphatically . . . "These are My Toys" . . . It's natural for him to say this, and he's the capitalist of tomorrow . . .

He may decide to be tomorrow's farmer or clerk or business executive or mechanic or scientist or almost anything he wants to be. But that's not the most important thought right now . . .

This is . . .

He can be the capitalist of tomorrow because our *competitive enterprise* system says he will be free to work where and when he will, to save, to invest, to spend. He will choose his work for his own particular kind of satisfaction. He will save for his own self-interest, but that helps everybody. He may invest to his own advantage and that makes work for others. For there is now, *and must continue to be*, incentive! An incentive that is *realistic* . . . that *creates* . . . that helps produce more.

We at Minneapolis-Moline hope to do business with this young American. We hope to help him grow . . . and in turn his growth will help our growth . . . and our growth will again create more and better oppor-

tunities for more people.

This is the chain reaction of good living that the *competitive incentive* system brings out . . . And our *competitive enterprise* system is the *incentive* system . . . the American way . . . WHERE ability and the willingness to work and to produce, still earn a deserved dividend . . . WHERE competition stirs everyone to do his level best.

The world has never known a better system or plan of progress for all mankind.

Let's guard this way of life . . . our American Heritage. It's been mighty good to a lot of people—and if we take care of it, *the best is yet to come*. The most important thing about America is that it is the land of hope, of promise, and of progress for our children.

Our part in the American parade of progress is the manufacture of a complete line of Modern Farm Machines, Visionlined Tractors and Power Units for modern farming and industry.

Sold and Serviced by MM Dealers and Distributors Everywhere



MINNEAPOLIS - MOLINE
MINNEAPOLIS 1, MINNESOTA

**GRAIN SORGHUMS —
DRY WEATHER INSURANCE**
(continued from page 14)

ghum is second only to corn as a silage feed.

Much breeding work has been done in the past on grain sorghums. The dwarf varieties are the work of this breeding program. One of the problems overcome was the rotting of the heads, while standing in the field, due to the compact head of the sorghum and a condition of high rainfall. This problem has been ironed out by the innovation of loose-headed varieties such as Caprock and Plainsman, which do not rot under high moisture conditions.

Sorghum should fit into many farm rotations. Reseeding crimson clover followed by sorghums is proving to be an excellent rotation for livestock farming. The fertilizer recommendation of 500 pounds of 5-10-5 to be placed on the sorghums at planting time provides sufficient nutrients for the clover. The cover, of course, provides additional nitrogen for the sorghum.

Grain sorghum is certainly a worthy competitor of corn. It has a promising future in the South and should help farmers to adequately plan their livestock feeding program.

A college student is one who enters his alma mater as a Freshman dressed in green, and emerges as a senior dressed in black. The intermediate process of decay is known as a college education.

"They say that there's alcohol in bread."

"Good, then we'll drink a little toast."

A small boy was seated on the curb with a pint of whiskey in his hand, reading *ESQUIRE* and smoking a big cigar. An old lady passed and asked: "Little boy, why aren't you in school?"

The child replied: "Damn it lady, I ain't but four."

The young Cadet attending a community dance tried to make conversation with his attractive companion, a symphony in sepia.

Smiling he said, "You look like Helen Brown."

She nodded her head. "Yes, I know," was her coy reply, "I don't look so good in yellow either."

Two Scots were playing golf under the broiling sun. One of them had a stroke — and the other one made him count it.

"Hey look at that bunch of cows."

"Not bunch, herd."

"Heard of what?"

"Herd of cows."

"Sure, I've heard of cows."

"I meant a cow herd."

"What do I care if a cow heard? I haven't said anything I'm ashamed of!"

A Hollywood actress who had been married to a director for three years without a blessed event, got a divorce and married a producer.

With Best Wishes to All
CLEMSON AGRICULTURAL STUDENTS



**ANDERSON
FERTILIZER
COMPANY**

Incorporated

Manufacturers of
**SULPHURIC ACID
SUPERPHOSPHATE**
and
COMPLETE FERTILIZERS

Anderson, South Carolina

SERVING THIS SECTION

for

65 Years



SULLIVAN HARDWARE

ANDERSON, SOUTH CAROLINA



quick and lasting rust protection for that big farm investment

Farm machinery is important — it represents a large investment that will give years of extra wear if you give it proper care. FALL is the time to protect valuable machinery from becoming winter feed for rust!



Pictured above is one of the world's most modern research laboratories—those of the Standard Oil Development Co. at Linden, N. J., where Esso Products are constantly developed and improved by engineers and technicians.

AGRICULTURAL STUDENTS — are offered free subscriptions to the regularly published **ESSO FARM NEWS**. Every issue packed with valuable articles and helpful hints on modern farming methods. Write today to: Esso Farm News, 15 West 51st Street, New York 19, N. Y.

Constant research by ESSO helps develop better products for better farming

ESSO RUST-BAN 347—forms a protective coating that helps prevent rust on plows, cultivators, discs and other implements . . . provides money-saving, all-winter protection. Esso Rust-Ban 347 can help add years of usefulness to farm machinery! **EASILY** applied, with a rag or old brush!

ESSO RUST-BAN 603 — to help prevent rust attack on the insides of idle engines. Ideal for your tractor engine... forms a protective film on inside surfaces, gives a lasting coating to inner precision parts, provides dependable "lay-up" protection! Obtain directions before using.

See your Esso Farm Distributor for the complete line of Esso Farm Products

You can depend on



**FARM
PRODUCTS**

**High-quality
products for
modern farming**

Esso Extra Motor Oil
Esso Extra Gasoline
Essolube HD Motor Oil
Esso Tractor Fuel
Esso Weed Killer 35
and many other
Esso Farm Products

ESSO STANDARD OIL COMPANY

"My Choice for Taste and Mildness"



~~L. O. Epps~~
~~Epps Dairy~~
~~Kingstree, S. C.~~

10/2

THE AGRARIAN

OFFICIAL STUDENT PUBLICATION



Two Points

IN HIS FAVOR

This is our man.

He lacks size, maybe, by professional standards. But there are lots of things about him that are really big league.

His heart, for one thing. It's almost as big as he is, and it's jam-packed with the stuff that winners are made of—things like intentness of purpose, and gameness, and that precious quality that the world calls loyalty.

Then, there's the training he's getting now. When in a few short years he takes his place on the team, he'll be ready. He'll have the rules of the game down pat . . . he'll know the priceless worth of fair play . . . and he'll know how to handle the ball when it comes his way.

Size, you say? Oh, size doesn't count in the *big* game, the one he's training for, the one called Life. He'll be first string—wait and see.

He's no individual, this man of ours. He's all the youngsters in these vast United States . . . he's American Youth, a title that represents two big points in his favor. And we're pinning our hopes on him.

He's our man!



JOHN DEERE - MOLINE, ILLINOIS

THE AGRARIAN

VOLUME 10

THE CLEMSON AGRICULTURAL COLLEGE

NUMBER 2

	Page
Water Works Wonders	three
Beef Bids for Popularity	four
Pastures Makes Profits	six
Mr. American Farmer	seven
Forest Journal	eight
Agrarion Philosophy	ten
Between the Furrows	twelve
Climate Versus Pests	fourteen
Co-ops Aid the Farmer	sixteen
Eggs from the Ag House	twenty

Staff

JOHN H. PITTS

HANS F. PAUL
Asst. Editor

ALAN B. SIBLEY
Advertising Manager

Associate Staff

Managing Editor	H. M. Lightsey
Business Manager	J. W. Woodfin
Circulation Manager	W. J. Jenkins
Chief Photographer	H. M. Chaplin
Photographer	L. G. Trimmier
Asst. Business Manager	R. T. Dunlap
Asst. Business Manager	R. B. Johnson
Asst. Adv. Manager	R. T. Hollingsworth
Asst. Adv. Manager	F. M. Flowers
Asst. Circulation Manager	G. F. Stanley
Asst. Circulation Manager	J. W. O'Cain

Assistant

J. T. Green
H. H. Flowers

Department Editors

Agronomy	A. B. Sibley
Agricultural Economics	R. D. Ward
Agricultural Engineering	R. M. Prince
Animal Husbandry	R. E. Cox
Botany	H. F. Paul
Dairy	D. K. Fricke
Entomology	A. C. White
Horticultural	J. L. Sims
Poultry	R. M. Miller
Forestry	R. E. Farmer
Voc. Agricultural Education	Q. A. Jowers

Advisory Board

Prof. B. E. Goodale
Dr. G. H. Aull

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Education of the School of Education.—Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising rates: one-fourth page, \$15.00; one-half page, \$28.00; one page, \$50.00.

All correspondence should be addressed to THE AGRARIAN, Clemson College, Clemson, S. C.

No article may be reprinted without permission.

Subscription free on request.

In South Carolina . . .
The **ANDERSON**
Newspapers are

STATE CHAMPIONS

In Growth, Public
Service and Pesticide!

South Carolina's Fastest Growing
Newspapers now have over

40,000 CIRCULATION

Leading all newspapers of the Palmetto State in circulation gains, they have passed Spartanburg and moved up next to Charleston in total circulation!

First South Carolina newspaper to sponsor series of radio broadcasts to publicize the state's natural resources to the nation. . . . First South Carolina newspapers to install complete photographic department and engraving plant enabling them to publish regularly more local and sectional pictures than any newspapers in the state. . . . First newspapers in the South to be selected by Northwestern University for a readership study.

Only newspapers in the United States to twice receive the University of Missouri silver plaque for rendering the greatest community service in the nation. (1941 and 1944). . . . In a typical year the Northwestern University survey revealed the Anderson newspapers contributed \$66,091.20 in space to help build this community and section. (Over and above normal news coverage.)

In 1950, the National Editorial Association awarded **The Independent** its Distinguished Service Bronze Plaque for outstanding Farm Pages. (In top three of U.S.A.) The Daily Mail was awarded the N.E.A. Bronze Plaque for having produced, during the previous year, the largest newspaper ever printed in South Carolina (304 pages.) Its edition was acclaimed in the group of the three best issued in the United States. . . . Awarded Editor & Publisher Blue Ribbon for writing and publishing the best advertisement in the United States in 1941. . . . First newspapers in state to be restyled for easy reading by America's foremost typographer, Gilbert Farrar, who designed Look Magazine, Los Angeles Times, Chicago Sun and many other leading publications. . . . Received NEA top honors in 1943 for circulation promotion and carrier-salesmen welfare program.

The Independent

L. S. HEMBREE, Editor

MORNING and SUNDAY

Associated Press—International News Service —North American Newspaper Alliance

WILTON E. HALL, Publisher

THE DAILY MAIL

J. B. HALL, Editor

EVENING

South Carolina's fastest growing newspapers

48 YEARS OF SERVICE TO SOUTHERN AGRICULTURE



+ + +
Breeders and Originators of:

COTTON

Coker 100 Wilt
Coker Wilds
Coker 100 Staple

TOBACCO

Coker's Golden Harvest
Coker's Golden Wilt
Coker's Mammoth Gold
Coker's Gold Dollar

OATS

Coker's Fulgrain
Coker's Victorgrain 48-93
Coker's Stanton

WHEAT

Coker's 47-27
Coker's Coastal
Coker's Hardired
Coker's Redhart

HYBRID CORN

Coker's Coastal 8-11*

* Available in limited quantities for 1951 season.

+ + +
See your local Coker Distributor or write for catalog.

COKER'S PEDIGREED SEED COMPANY

The South's Foremost Seed Breeders

HARTSVILLE, SOUTH CAROLINA

WATER WORKS WONDERS

Life is dependent upon water, sunshine, air and soil. Air and sunshine are beyond the influence of man, but the land and water resources are tremendously affected by the manner in which they are used. History records the rise and fall of empires since agriculture had its beginnings in Mesopotamia and the Nile Valley over 7,000 years ago. Palestine, North Africa, Syria, China, Greece and many other nations have paid for the misuse of their land with sorrow and the destruction of their civilizations.

In recent years, the Jews have made wonderful progress in draining swamps and reforesting the eroded hill country in Palestine.

The destruction of terraces and the over grazing of hill lands by the goat herds of desert tribes had unleashed the forces of water to erode the soils off the slopes into the valleys making marshes and ruining the farm value of the hill country and the valleys for nearly 13 centuries.

Under natural conditions, water is not a destructive force because vegetative cover protects the soil from erosion. Modern industrial developments and intensive agriculture require tremendous quantities of water but tend to encourage the destruction of water conserving influences. Our homes need water for drinking, washing and cooking; the cities must have it for sanitation, fire protection and recreation. Industries must have water to produce power and light and to use as a solvent, a cooling agent, a means of waste disposal and a part of the finished manufactured products.

Actively growing plants contain 75 to 90 per cent water. The water in a plant at any one time is a very small part of the total that passes through it during development.

Photosynthesis is the process by which the carbon dioxide taken from the air and the water taken up by the plant roots are combined in the presence of chlorophyll and with the energy of sun light to form sugar.

J. P. LaMASTER

There are 3 parts of carbon dioxide and 186 parts of water vapor to 10,000 parts of air. It requires six molecules of carbon dioxide and six molecules of water to form one molecule of sugar. As a result of these relationships, great quantities of water are transpired through the leaves of plants.

The bodies of animals contain an average of 56 per cent water. Water is required daily by all classes of animals for physiological purposes such as regulation of body temperature through sweating or evaporation from body surfaces, the production of blood, internal secretations, milk, eggs and the products of reproduction. A cow drinks three pounds of water for each pound of milk produced.

Where does all this water come from?

An old philosopher is quoted in a Minnesota Resources Commission bulletin as saying, "All the rivers run into the sea, yet the sea is not full; unto the place from whence the rivers come, thither they return again." Waters which the rivers carry back to the ocean represent less than 20 per cent of the rain received. Where does the balance come from? The air cannot store a great deal of water as vapor. Ordinarily there is more water in one foot of soil than in the 25 miles of overlaying air. The temperature of air gets one degree colder every 325 feet up. This cooling off continues for about 7 miles and from there on the temperature is about 60 degrees below zero even in summer. Water vapor cannot exist at this temperature. Even at zero the air can hold less than one twenty fifth as much water vapor as it can at 80 degrees. For this reason, most all atmospheric moisture is found within one mile of the earth's surface. This moisture envelops the earth and makes human life possible. Without this blanket, the earth's temperature would be 300 degrees below zero.

Observation of precipitation on land areas and of run-off from land indicates that precipitation greatly exceeds run-off. Several research workers have calculated that run-off amounts to 30 per cent of the total precipitation falling on land. This would leave 70 per cent that must be returned to the atmosphere. Studies reported by the U.S. Department of Agriculture in 1937 indicated that the moisture for precipitation in the United States was derived mainly from the oceans and transported by maritime air masses. The dry polar air movements passing from the northwest toward the east and southeast pass off the continent with significant gains in moisture, whereas the tropical maritime air masses traveling from the Gulf of Mexico toward Canada show a considerable net loss of water. These relations explain the dry climates of the western part of the United States as compared with the more humid climate of the eastern and southern sections.

The science of hydrology is concerned with the properties of water. It is now recognized that the distribution of water in the form of a solid, a liquid or a vapor obeys a fundamental law of equilibrium. The amount of water in the world does not change. The form and location of the water supply changes. This relationship representing the balance of water between the hydrosphere (oceans, lakes, streams and underground waters), the lithosphere (the solid part of the earth) and the atmosphere is called the hydrologic cycle.

The balance between the rainfall on the land and the evaporation from that area are the significant facts about the weather and climate of that section. The sun supplies the energy for evaporation and when moisture evaporates from an object that object is cooled. The total amount of energy received from the sun each year would melt a layer of ice 140 feet thick. If it were not for

(continued on page eighteen)

BEEF BIDS FOR

Preferred Breeds Compared

If you were to ask several people which is the best breed of beef cattle, you would have a good chance of getting several different answers. The reason we have so much trouble in comparing the breeds is that there are numerous qualities and points to be considered, all of which are found in no one breed. The object of this article is to give some, not all, for books have been written on the subject, of the more important characteristics of the favorite breeds, with an idea of tying in the uses of each breed with its adaptability to South Carolina conditions.

Hereford and Polled Hereford

The Herefords are the most popular beef cattle in S. C., this popularity in itself being an advantage, because bulls can easily be secured for commercial herds, and business can be carried on easily by purebred breeders.

Probably the Herefords greatest long run advantage is its ruggedness an ability to survive on scanty range. During hard winters they

seem to stay in fatter condition than the Shorthorn or Aberdeen Angus breeds. Herefords are medium-sized, are blocky and low set, are good feeders, and produce fairly good carcasses. In other words, Herefords can be considered in general, the most all-purpose breed of cattle.

WINSTON SIBLEY Animal Husbandry 1951

Probably the greatest practical disadvantage to the Herefords is that their milk production is below that of the other breeds. Since the most popular method of beef production in South Carolina is the production of fat calves to be sold at weaning time, this is an important disadvantage. Also, Herefords are bothered a great deal by pink eye, screw worm, and foot rot.

The Polled Herefords possess the same characteristics as the Herefords; however some additional points should be brought out about them. The Polled Herefords are an up-and-coming breed in purebred

circles. Good ones sell at a terrific price, but since it is a new breed, good animals are scarce. As a whole, the breed lacks hind quarters and are polled only from 50 to 100 percent; however, these two factors are constantly being improved by breeders, and this room-for-improvement concept is what may bring dividends to some enthusiastic South Carolina breeder.

Up to date, the cost of Polled Hereford bulls has been a disadvantage to the commercial cattlemen, and although this breed has been popular with them, to my mind it is an expensive method of dehorning.

Aberdeen Angus

Since we mentioned popularity in the Hereford, it must also be noted that the Aberdeen Angus has the advantage of being the fastest growing beef breed in popularity. This is certainly a factor to be considered in starting a purebred herd, although stock would not be quite as easy to obtain in South Carolina as is in the case of the Hereford breeds.

Other advantages are unexcelled typeness among the beef breeds, unmatched carcasses among the breeds, and freedom from pink eye and usually from foot rot, and an abundant milk supply. This last factor should be considered in remembering that commercial fat calf production is widely practiced in South Carolina. Too, the Angus is a 100 percent dehornor.

The fact that the Angus is the smallest beef breed is an advantage in that they mature earlier, but this is a disadvantage in that many people prefer large animals. Other disadvantages are their intolerance to severe summer heat, their nervous temperaments, and, it is thought, their increased susceptibility to flies and Bang's disease over other breeds.



Aberdeen-Angus Bull

POPULARITY IN S. C.

The chief disadvantage to the breed is that they are not thought to be as hearty or as good rustlers as the other beef breeds, but with the coming of better pastures to the South, this fault has a good chance of being eliminated.

Shorthorn

The unpopularity of this breed in South Carolina is certainly a disadvantage to purebred breeders, for animals are very cheap. However, this is an advantage in that some wise commercial beef producer, who wants to look long enough, can buy top-flight Shorthorn bulls at comparatively cheap prices.

The chief advantages to the Shorthorn are that they are the largest beef breed and give more milk than any of the beef breeds. These two factors combine to make a wonderful combination for South Carolina's fat calf production, although the breed hasn't been "discovered" here yet. Also, the Shorthorn are reputed to have the mildest temperaments as a general rule, and fall in between the Herefords and Anguses as to rustling ability.

The Shorthorn breed is not as typey as the Angus or Hereford, being long and upstanding. Also, the fact that there is not one standard color but four,—red, roan, white, and red and white,—is a disadvantage. The Shorthorns are bothered by screw worm, foot rot, and pink eye, and since they give a large supply of milk, must be watched for udder trouble.

There is also a Polled Shorthorn breed, but since it is a new breed, top animals are scarce.

Brahman and Associated Breeds

This new breed of cattle is gaining popularity both as purebreds and crossbreds because of its ability to withstand great heat and cold, diseases, and insects. They are said to be excellent rustlers, even grazing in summer sun all day. Breeders claim their animals raise larger calves than do the other breeds of beef cattle, this being a factor of noteworthy importance. A recent advertisement showed a Charbray bull, a Brahman cross on a French breed, that weighed 1345 pounds at 11 months of age.

The great disadvantage of the breed is, of course, its wildness. In the barren country and swamps, where they are proving a very practical breed, they become very difficult to handle. Another disadvantage is the legginess and lack of best type in the Brahman, although they are reputed to produce a good carcass with a high dressing percentage.

The Sanata Gertrudis, the Brangus, the Beefmaster, and the Charbray are some recent breeds and crosses that are gaining much popularity.

I have given some of the more important strong and weak points of the leading breeds without discriminating, I hope. It should be noted that these points pertain to the breeds as a whole. To the characteristics I have mentioned there can be found many individuals that are exceptions. This whole thing of breed choice boils down to a matter of use, of conditions, and of personal preference. At any rate, we have several good breeds to choose from.



Hereford Bull



Shorthorn Bull



PASTURES MAKE PROFITS

This year, more than in any recent year, farmers have had reason to doubt the claims for winter grazing programs. The recent cold snap during Thanksgiving, when state temperatures ranged between 5-10°F., in most localities, wrecked many a farmer's hopes for heavy grazing provided by small grains and some perennial grazing crops. Hay, which farmers thought they would not need in abundance, is at present a very scarce item, and even oat straw is becoming as expensive as many previous year's prices for good legume hay. It is necessary for farmers to make different plans concerning next year's feeding problem; hence, it is expedient to review winter grazing to see what can be expected of it during average winter conditions and what further practices must be incorporated in our farm management to offset an emergency, the failure of winter pastures as exemplified by this winter's crops.

Many strong advocates of winter pastures argue this is an unusual winter and that winter pasture programs are not deserving of the criticism they are receiving; however, we must take into account the fact that in searching for a winter feed-

ALAN SIBLEY
Agronomy 1951

ing program, we are looking for practices which will be profitable during usual and unusual winters.

First, how unusual has this winter been? We can, in fact, say that this winter has been typical except for the one cold snap Thanksgiving. A cold snap of zero temperatures throughout this state occurs at irregular intervals about once every twenty years, as recorded in the 1941 Yearbook of Agriculture entitled "Climate and Man". We can then expect 5 percent of our winters to throw a vicious cold snap at us that will greatly damage our winter crops. Aside from this, we can expect about four cold snaps a year with temperatures as low as 20°F., but these are of short duration; hence, our winters are usually mild.

Our last few winters have been unusually mild, and this has made us overly optimistic concerning winter grazing.

Since our winters are usually mild, winter pastures should not be abandoned, but they must be supplemented, for there are many days that our pastures make little or no

growth. Year-round-grazing in the South has given us the attitude of being able to graze readily during the cold months. Oats, rye and other cool-season crops begin growth at temperatures of 32-41°F., and do not make optimum growth until 77-88°F. The average temperature for Greenville County, for example during January is 40.3°F. How can we expect even the cool season crops to carry on abundant growth and be readily grazed at this temperature? With this in mind, our growing season is expressed by the number of frost free days between the last killing frost in spring and the first killing frost in fall. Since our growing season is an average of 240 days throughout the state, our winter pastures must be heavily supplemented during the remaining 125 days if heavy grazing is to be expected in the spring.

The most practical way to supplement grazing is the use of hay. Farmers usually have a surplus of summer grazing and should store up all hay possible. Grass hay is as valuable as good legume hay if cotton seed meal is fed along with it, for the c-s-m, or any other good pro-

(continued on page eighteen)

MR. AMERICAN FARMER

By **JOE W. O'CAIN**
Agronomy '54

With the appointment of four faculty members from Clemson College to a South Carolina Regional Committee to administer the Hoblitzelle National Award in Agricultural Sciences for this area, the hunt for the "Man of the Past Two Years in American Agriculture" is under way.

The South Carolina Regional Committee, appointment of which was announced by Dr. C. L. Lundell, Director of the Foundation, is made up of a group of leaders in the state's agricultural and educational systems. Dr. W. R. Paden, Agronomist at the South Carolina Experiment Station, Clemson, heads the Committee as Chairman.

Other members of the Committee, all of Clemson College, are as follows: Dr. G. M. Armstrong, Head of the Department of Botany and Bacteriology; Dr. M. D. Farrar, Head of the Department of Entomology and

Zoology; Dr. W. A. King, Professor of Dairying, and Dr. O. B. Garrison, Professor of Horticulture.

According to a recently issued release by Ross T. Fitzgerald, Science Editor of the Texas Research Foundation, the following information is made known:

"The Award, which will be made biennially commencing in 1951, through the Karl Hoblitzelle Agricultural Laboratory of the Texas Research Foundation at Renner, carries a \$5,000 cash prize and a gold medal. These will go to the person who has made the most important contribution to American agriculture within the preceding two-year period."

There are 39 Regional and three Territorial committees set up by the Texas Research Foundation. In this find-the-man campaign which is being conducted on a nation-wide basis, virtually every scientific finding of importance to agriculture which

has been published within the past two years is being scrutinized, although only research of which the results has been published between July 1, 1948, and July 1, 1950 is being considered. The research may have been earlier, but publication must have occurred between these two dates.

This capable committee representing South Carolina, together with the members of the other 41 Regional Committees, is entrusted with the job of combing the nation for suitable scientific contributors to agriculture who may rate consideration for this already widely covered Award. Its provisions and purposes have already been generally compared with those of the Nobel and Pulitzer prizes, in their fields.

The creator of this Award is Karl Hoblitzelle of Dallas, who is a top-ranking business leader, capitalist and philanthropist of the Southwest.

(continued on page seventeen)



THE HOBLITZELLE COMMITTEE consisting of (l. to r.)—Dr. G. H. Aull, Dr. O. B. Garrison, Dr. W. R. Paden, Dr. M. D. Farrar and Dr. W. A. King.



FOREST JOURNAL

October 1800—A soft breeze sends yellowed leaves earthward while an autumn sun sinks low over the mountains sending long shadows across the forest floor. Only the noisy creek disturbs the evening's peacefulness as it rushes madly down the narrow cove and over the cascades to the wooded valley below. Here and there a small chipmunk can be seen darting with short, swift movements from one great tree to another in search of seeds for his winter's food supply. High in a beautiful yellow poplar a brown cane of seeds is suddenly disconnected by the breeze and falls to the ground where it is seized by a small rodent. Stuffing his cheeks with part of the cane, he scampers to a small hole under a nearby root and there deposits his load which is then covered with leaves and bark. But one small seed drops on the ground outside the storehouse. Brown leaves fall and cover the little seed.

April 1801—The mountains are covered with a misty rain obscuring the sun, and making the sharp ridges only dull outlines against the leaden sky. A brown thrush hops merrily through the damp woods as it

By **R. E. FARMER**
Pre-Forestry '52

searches for an early worm. The little creek, filled with melted snow, is now a mighty mountain torrent crashing over the huge boulders lying in its path. Nearby two small leaves are seen peeping up. The sun slowly seeps through the mist and warms the humus from which the little plant emerges.

June 1810—A mountain trout drifts lazily in a cool clear pool; his fins fanning the stream just enough to keep himself balanced. High overhead, a hawk circles warily as he scans the forest for some unlucky rodent. Up on the ridges, the Red Spruce has put forth new branches, and farther down there are bright new leaves on the maples and oaks. The dense thickets of rhododendron are covered with white blossoms around which the bees work busily. Down near the stream, a beautiful arrow-like tree pushes its way up from beneath the underbrush. Although it is only ten years old it already measures eight inches in diameter having grown swiftly in the rich soil. With its bright green

leaves and smooth grayish colored bark it is a beautiful tree.

September 1850—The air is still and the leaves hang limply in the humid atmosphere. No sound is heard except the harsh cawing of a crow as he hurriedly flies to his nest. All wildlife has sought shelters. A squirrel can be seen cautiously peeping out of his hollow tree. A brown thrush huddles in her nest. A low rumbling is heard in the distance as a slight breeze stirs the tops of the tall poplar near the stream. A long streaked flash of lightning followed by a strong clap of thunder is seen over the ridges. The breeze increases in velocity as the storm approaches with its rain and lightning. A curtain of rain engulfs the mountain cove as the high ridges are swathed in lightning. Suddenly there is an ear splitting crash as a bolt of lightning splinters an ancient chestnut and sets it aflame. As rain has passed on down the valley, the wind sends sparks and flaming sticks into the underbrush. Soon a wave of flame races along the ridge top and then starts down the cove. It travels down the mountain leaving burning stumps and brush in its wake. Pushed on by the wind the fire soon reaches the stream where it is stopped before gaining any strength. A dry stump near the tall poplar catches on fire and the green tree's bark is seared by the hot flames. As night comes the fire gradually burns itself out, leaving charred stumps and a blackened forest floor.

October 1950—It is a crisp morning. Two men are seen walking up the logging trail which is parallel to the stream bed. "The boss said to start cutting on that stand he marked yesterday," says one as he points to some tall poplars near the stream. Soon they reach a large tree which measures over one hundred and fifty feet in height and six or eight feet in diameter. Since a white blaze appears on the trunk they prepare to fell the tree in such a way that it will not be injured by the crash. After ten minutes work with a power saw a hundred and fifty years of nature's labor came roaring down so that another house can be built. All that remains is another ugly stump where once stood a tall, graceful tree.

Since



1845

This trademark is your guarantee
of highest quality in meats!

Kingan's
R E L I A B L E

Beef - Veal - Pork - Ham

Tender Smoked Hams

Self-Service Luncheon Meats

Tasti-Cooked Hams

Canned Meat Products

Fresh and Smoked Sausage

Lard and Shortening

Sliced or Slab Bacon

U. S. GOVERNMENT INSPECTED

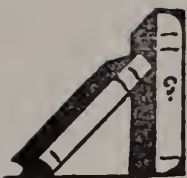
When you buy Kingan's . . . You buy the best!

BUYERS and PROCESSORS
of LIVESTOCK

Kingan & Co.

ORANGEBURG, SOUTH CAROLINA

Main Plant and General Offices: Indianapolis, Indiana



Agrarian Philosophy

By
The Editor



The recent announcement by the U.S. government that this state had been chosen as the site for a new, multi-million dollar H-bomb plant was greeted with mixed emotions by South Carolinians. Most rejoiced at the news, but many were openly bitter. Among the most outspoken against the plan, and rightly so, were those farmers living in the area that is to be used. For these people the H-bomb plant meant the loss of their jobs and their farms and homes, many of which have been in the family for a hundred years or more. Yet, on the whole, South Carolinians seemed to be in favor of this new government project.

We might do well to stop and think just how this project will affect our state economy in relation to agriculture. Will the farmers prosper, or will they suffer as a result of the H-bomb plant? What are some of the advantages and some of the disadvantages that it will bring?

The immediate effect of the new plant is that it will take 225,000 acres of farm and forest land out of that which is available to South Carolina farmers. Many large and prosperous farmers, along with wage hands, tenant farmers and share-croppers will be forced to move. The probability is that most of the prosperous and better farmers of the area will relocate and begin farming in other areas, while the poorer and unsuccessful farmers will take jobs in textile mills or industrial plants. This will have the definite advantage of weeding out some of the more backward farmers of our state.

Another advantage that the H-bomb plant will bring is that of an increased demand for agricultural products. The many workers that come with it will have to be fed and clothed and they will, we hope, be fed on South Carolina produce and clothed in South Carolina cotton. The area surrounding the new plant is primarily agricultural and, in this new industry, it will find a ready outlet without shipping costs, preservation expenses, and needless middle man profit for its produce. Yet, not only the area surrounding the project, but, also the entire state will benefit as a result of this new market for its agricultural and industrial products.

The greatest advantage that the new plant will offer is that of increased capital. One of the factors that has long been limiting South Carolina agriculture is the lack of sufficient funds for agricultural investment. This will prove an advantage to all businessmen in the state. There will have to be carpenters and bricklayers, engineers, and foremen, plumbers and electricians to build the plant. But the building of the plant will only be the beginning. After the plant is built there must be apartment houses and houses for those persons that will work at the project. There must be stores and filling stations to satisfy their demands. There must be transportation available to them. And, through all of this, runs the farmers welfare. The workers must be fed; the laborers must be fed, and the products that they buy will be purchased from government paid salaries. In short, there will be a tremendous influx of capital into our state. But we can let this prosperity slip through our fingers. For if we do not seek to balance our farm program, much of this capital will have to be sent out of the state to purchase the agricultural goods that we are not producing. Let's balance our farm program with dairies, beef cattle farms, truck crops and row crops in order to keep this new wealth within our state.

Yet, there is a darker side to this rosy picture. Every blue sky has it's clouds, and the cloud that the H-bomb factory will bring to South Carolina, is the drain that it will place on our farm labor. One of this state's outstanding agricultural advantages in the past has been its readily available source of cheap labor. Farm wages in South Carolina and the South as recorded in the 1944 census was less than half that of any other section of our country. But now, there will be hundreds of high paying jobs open to laborers. To meet this competition for his labor, the farmer must become more skillful in trade labor management and farm management. He must learn to utilize white labor in addition to colored labor. He must grant to his laborer better wages, better houses, better food and better health conditions. He must arrange

(continued on page thirteen)

Look Ahead to Healthy Crops

WITH THESE FREE BOOKS
ON INSECT CONTROL...



Healthy fields mean profitable yields! One good way to get the most out of seed and labor is through a sound program of insect control with toxaphene insecticides. Approved by the U.S.D.A. for grasshoppers, and by leading cotton-growing states for the control of all important cotton pests, low-cost toxaphene dusts and sprays are also being used effectively against an increasing variety of insects that attack other crops. This collection of books on insect control includes detailed recommendations on specific insects and a summary of latest federal or state recommendations. Write today for your free copies.



HERCULES POWDER COMPANY

INCORPORATED
911 King Street, Wilmington, Delaware

MAKERS OF TECHNICAL TOXAPHENE FOR AGRICULTURAL INSECTICIDES

toxaphene

DUSTS SPRAYS

11X51-5



THE NEW AGRARIAN STAFF: (l. to r.) sitting, Frank Flowers, Harry Lightsey, (standing) Frank Dunlap, Bob Johnson, Quimby Jowers.

THE AGRARIAN STAFF BANQUETS

The Annual meeting of the Agrarian staff, in honor of the senior members and retiring staff, was held at Seigler's Steak House in Walhalla, on Monday evening, January 15, 1951. After a delicious steak, the senior members were awarded the "Agrarian Key" by John Pitts the presiding officer. Jack L. Sims, horticulture senior from Orangeburg, S. C., was awarded a cash prize for selling the most Christmas cards during the card sale before Christmas. Selling Christmas cards is one of the main sources of financing the Agrarian. The retiring staff members were: John Pitts, editor, senior agronomy major from Clinton, S. C.; Hans Paul, assistant editor, senior botany major from North Charleston, S. C.

John and his staff were highly commended for their splendid work, devoted time and interest spent in publishing the **Agrarian**. The new staff included Harry M. Lightsey, editor, senior agronomy major, from Columbia, S. C.

Prof. Ben E. Goodale, the staff adviser, made a brief talk on the work done in the past and how to make the **Agrarian** even a better magazine. Professor Goodale was the staff adviser in 1938 when the **Agrarian** was founded. Harris L. Beach, now V.A.E. teacher in Smoaks, S. C., was the first edi-

tor. With Professor Goodale's sound advice and complete co-operation, the **Agrarian** has become one of the most popular school magazines on the campus.

NEW STAFF MEMBERS

Dr. T. C. Peele, soil scientist, and Dr. Maurice Phillippe, associate agronomist, have been added to the Agronomy Experiment Station staff. Dr. Peele was formerly with the Soil Conservation Research located at Clemson. He returns to Clemson from Mobile, Alabama, where he has been associated with the Pearson Laboratories.

Dr. Phillippe was formerly with the Fertilizer and Inspection Analysis Department at Clemson. He has just received his doctor's degree from Purdue University.

PROF. G. B. NUTT IS ALPHA ZETA SPEAKER

The local chapter of the fraternity of Alpha Zeta at its last regularly scheduled meeting on February 22 heard a very interesting talk by Prof. G. B. Nutt, head of the department of agricultural engineering. He spoke on subjects related to foreign agricultural practices and job opportunities abroad. Mr. Nutt placed special emphasis on Asiatic countries of the Near East. Mr. Nutt has recently returned from a tour of Egypt, Iraq, Iran, Lebanon, and Syria as a representative of the U.S. Government.

SOUTHERN AG. WORKERS' MEETINGS

The association of Southern Agricultural Workers' meetings will be held in Memphis, Tennessee, on February 5, 6, and 7. About twenty-five members of the staff of the Experiment Station and the college will attend these meetings.

DUKE WINS SEARS-ROEBUCK SCHOLARSHIP

Mr. Robert W. Duke of Kingstree, S. C., has been awarded the Sophomore Sears-Roebuck scholarship. Mr. Duke receives this scholarship as a result of having stood highest among the 20 candidates in his class for this award. His grade point ratio for the school year 1949-50 was 8.6. The scholarship is for \$200.

THE FURROWS



MR. R. A. MCGINTY, VICE-DIRECTOR PASSES

Rupert Alonzo McGinty, Vice-Director of the South Carolina Experiment Station, died at his home in Clemson at 2 p.m. February 28, after several months of declining health.

Mr. McGinty was born at West Point, Georgia, on May 2, 1886. He received his B.S. degree from Alabama Polytechnic Institute in 1913, his A.M. degree from Washington University in 1919, and further graduate training at Cornell University. He began his teaching career in horticulture at Colorado Agricultural College where he spent 14 years and achieved the rank of associate professor.

In 1928 Mr. McGinty came to Clemson as professor and head of the horticultural department and except for two years spent at Oklahoma Agricultural and Mechanical College his service to this institution has been uninterrupted. During 1934-36 he served as Acting Dean of the School of Agriculture and Acting Director of the Experiment Station. Since 1936 he has been Vice-Director of the Experiment Station.

Mr. McGinty was particularly interested in the breeding of crops adapted to southern conditions and was tireless in his endeavor to expand plant breeding facilities in the South. Through his efforts and that of other leaders, the U. S. Regional Vegetable Breeding Laboratory was established near Charleston, S. C.

One of his major research accomplishments, in collaboration with a colleague, was the development of the Clemson Spineless variety of okra. Clemson Spineless okra was introduced in 1936 and received a silver medal award in the 1939 All-America Selections of the American Seed Trade Association. Since that time it has become the most popular variety of okra in the South.

He has served as chairman of the Experiment Station Directors of the Southern Region, has been a member of the experiment station committee on organization and policy of the Land Grant College Association, a member of the Committee of Nine

under the Research and Marketing Act, a member of the Society of Horticultural Science, regional secretary of Phi Kappa Phi, and a member of Sigma Xi, Alpha Zeta, and Phi Eta Sigma.

Mr. McGinty was a devoted member of the Fort Hill Presbyterian Church, actively engaged in all phases of church work, and currently serving as chairman of the board of deacons. His interest in religious life on the campus included membership on the Y.M.C.A. advisory board.

Survivors include his wife, Mrs. Letitia Cross McGinty; three sons, Thomas F. McGinty of Washington, D. C., William M. McGinty of Greenville, Richard Alan McGinty of Clemson; one daughter, Mrs. Lester F. Davis, Jr., of Philadelphia, Pa.; two brothers, J. Roy McGinty of Calhoun, Ga., and Roland McGinty of Atlanta, Ga.

AGRARIAN PHILOSOPHY

(continued from page ten)

for a better balanced farm program so as to give his labor steady employment, for once labor is left unemployed, it tends to leave and not come back. The farmer must also beware of the unions and group organizations that industrial labor bring with it. Already, Northern labor has tried to unionize the farmer. So far, it has failed, but we must prepare for much more expensive and intensive union campaigns. The farmer must never lose sight of the fact that he is a capitalist. He must never succumb to union promises and persuasions.

These are some of the advantages and disadvantages that the H-bomb plant brings with it. To my way of thinking, the many great advantages outweigh the one real disadvantage that the plant will bring. Yet, these advantages and disadvantages are not limited to the H-bomb plant alone. They apply to all industry. As such, let us, the farmers, welcome industry and make the South Carolina of the future a state in which industry and agriculture meet in order to pursue their aims to the just end and to the common benefit of all.

CLIMATE VERSUS PESTS

WEATHER AND CROP DISEASES

By H. F. PAUL
Botany 1951

Throughout historical records set down by man, one may find that diseases and pests were great factors in the take of man's food resources. More than once the records reveal that entire nations were threatened with famine from this cause. Less than a century ago, late blight so blasted the potato crop of Ireland as to spread starvation throughout the island. Many Irish-Americans trace their descent to emigrants who were forced to leave the "ould sod" by this disaster. This country also felt the effects of the disaster from plant diseases. In 1904, 1916, 1935, 1937, and 1938, this country and Canada experienced rust epidemics in grain that were widespread and devastating in their severity.

Centuries before man recognized the true causes of rusts, smuts and mildews, he attributed such maladies to the whims of the gods. The Romans believed the god Robigo had the power to protect wheat from rust, and they held sacrificial feasts to gain his good will. Later, people attributed plant diseases to the vagaries of the weather. Finally, in the middle of the eighteenth century, Tillet proved that wheat bunt is transmitted through its "black dust", which we call spores.

Since Tillet, knowledge in this field has grown enormously, and we now know not only the causes of most of the serious plant diseases but also the true relationship of weather to their incidence, spread, and effects.

Weather influences plant diseases in many different ways. Some require moist, humid conditions for infection and development; others

are more serious when it is relatively dry. Some are favored by cool temperatures; others require warm weather. In some cases, the principal effect of weather is not on the disease producing organism itself but on the host plant or even on an insect carrier of the disease, when such a carrier is necessary to cause infection of the host plant. Many examples of these different relationships might be cited, but only a few can be given here.

The late blight of potato is favored by excessive humidity and moderate temperatures, conditions necessary for the spread of the parasite. Warm, cloudy, moist weather makes the apple and pear more susceptible to bacterial blight, gorging tissues with sap so that they are more readily invaded by the organism; hot dry weather checks the progress of the disease. Moisture and wind are important in the formation and spread of spores of the apple scab. The spread of peach brown rot is similarly controlled by the rain and wind. Severe dry spells tend to curb curly top of sugar beets by killing off certain annuals upon which the leaf-hopper which carries the curly top virus to the beets depends for summer survival. Scab of wheat and other small grains is always prevalent when warm, moist weather occurs during the period from heading to maturity.

Among the most important of all plant diseases affected by the weather are the cereal rusts.

In observations made from early 1900 to 1930, it was found that in Minnesota and the Dakotas epidemics of stem rust did not occur in seasons when the average temperature during the critical period was below 61 degrees F. In some seasons, as in 1910, even when the average tem-

perature was relatively high, there was no rust epidemic, largely because of deficient rainfall.

In 1915, the United States produced one of its early record wheat crops—1,009 million bushels. The average summer temperature for that year in Minnesota and the Dakotas ran more than 4 degrees F. below the normal of 62.5 degrees. There was no rust epidemic. The season of 1916 in the spring-wheat states started off even more promisingly than did that of 1915. July 1916, however, was characterized by relatively high temperatures and fairly abundant rainfall. The result was a widespread devastating epidemic of rust.

Humidity is second only to temperature in promoting cereal-rust epidemics. Dew or other free moisture on the wheat plants is necessary for the germination of rust spores. If conditions prevent rain or the condensation of dew, there need be little fear of an epidemic, even with an abundance of spores. A succession of overcast nights or continuous night winds which prevents dewfall during the critical period for rust infection will prevent the spread of rust, even though the average temperatures are favorable.

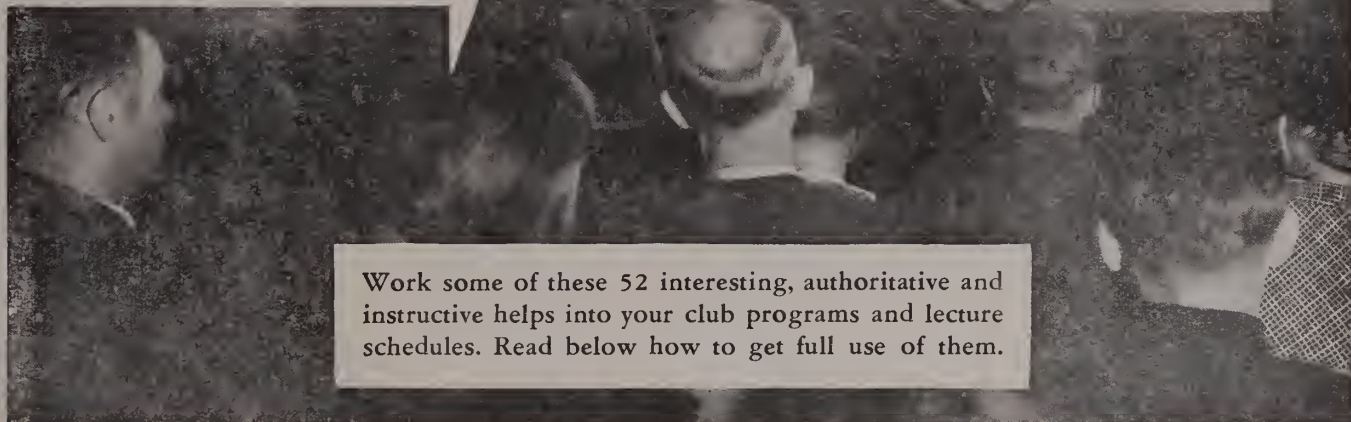
The important thing in the development of a rust epidemic is that the favorable conditions must operate at the same time. There must be (1) favorable warm temperature; (2) abundant moisture; (3) abundant spores to infect the plants; and (4) a susceptible grain and alternate host. More than once, when the stage has seemed set for a destructive rust epidemic a change in one or another essential factors has prevented its development.

Weather variations in any one locality are not the only important climatic factors that control epidemics of the cereal rusts in the U.S. The climatic weather complex of the entire northern and southern midcontinental area of North America also plays an important role.

- CLUB OFFICERS!
- INSTRUCTORS!

52 AIDS

TO INTERESTING PROGRAMS
AND LIVELY LECTURES . . .
NO CHARGE!



Work some of these 52 interesting, authoritative and instructive helps into your club programs and lecture schedules. Read below how to get full use of them.

12 MOVIES—all 16 mm., in full color and sound! "Soil and Life" is on soil conservation. "Win Against Water" tells about terrace building. Ten others.

13 BOOKLETS—based on above films, with same or similar titles. Several additional booklets, independent of movies. All profusely illustrated, clear, interesting.

7 SLIDE FILMS—with accompanying phonograph record or narrator's script—teach safety, conservation farming, proper use and care of machinery.

17 POSTERS—and charts, 24 by 36 in., easily read on classroom wall. Include machinery cross-sections, conservation farming methods, farm safety, etc.

3 OUTLINES—help teach class or club the essentials of building a pond, of contour farming, of grassland farming. Each member can have his own copy.

MORE COMING UP! Other movies, booklets, and additional teaching aids are now in production. Look to Case for visual education materials on advancing farm practices.

Send for free catalog. It lists and describes all Case visual education materials, tells how to schedule films, how to order booklets and posters. A real help in planning your program or lecture schedules. Address nearest branch or Racine office.



CASE

Films are loaned and printed matter provided without charge to agricultural colleges, student clubs, extension workers, county agents, vocational agriculture teachers, etc. Schedule movies through your nearest Case dealer or branch, or write to Educational Div., J. I. Case Co., Racine, Wis.

CO-OPS AID THE FARMER

By **ROBERT T. WARD**
Agricultural Economics '52

During the past few years, farm cooperatives have been the object of bitter attacks by private business organizations. Before trying to explain the reasons for these attacks, let us review briefly the history of cooperatives.

Most cooperatives adhere to certain fundamental business principles. Briefly, they are as follows:

- (1) Open membership
- (2) One vote per member
- (3) Limited returns on capital with a maximum of 8 percent
- (4) Payment of patronage refunds on the basis of the amount of business done with co-ops

Despite all the advantages they furnish the farmers, co-ops have still

been the object of attacks. Their most bitter critic has been the National Tax Equality Association which was organized primarily to fight co-ops.

The N.T.E.A.'s argument is based on the opinion that farm co-ops, which are tax exempt, should "pay off" like other businesses. This attack is made against all co-ops, but in reality the charge is aimed at large co-ops such as the California Fruit Growers' Association. It is the large co-ops and not the small operators that the N.T.E.A. hopes to eliminate as a threat to all-out profit business in the U. S.

The N.T.E.A. has launched four main charges against co-ops.

- (1) Private businesses in the same field cannot compete due to the heavy taxation to which they are subject.

(2) Co-ops, with their free and easy capital, are rapidly expanding into businesses not related to farming.

(3) Co-ops will eventually, if allowed to expand unhindered, eliminate the profit system.

(4) Through co-ops, the communists and reformers are seeking to destroy the American way of life.

In answer to the first charge, co-op leaders and others believe that the tax question is illogical since taxes are levied only on the net income after all expenses and officers' salaries are deducted.

Co-op leaders, in answer to charge two and three, contend that cooperatives are not a threat to free enterprise. Prices on goods are usually at the level of most retail prices.

(continued on page eighteen)



**PENDLETON
FERTILIZERS**

MADE BY

Pendleton Oil Mill

PENDLETON, SOUTH CAROLINA



*Across the U.S. and overseas...
you can depend on—*

TWA

MR. AMERICAN FARMER

(continued from page seven)

He has also set up two other similar prizes of \$5,000 each, and gold medals, which will go for contributions to Texas agriculture and rural life respectively, and are open only to Texans.

The purpose of the National Award is defined as follows:

"1. To encourage and promote scientific investigations for the solution of prevailing unsound agricultural practices, and the conditions growing out of those practices.

2. To develop well-balanced, efficient agricultural systems, adapted to the soils and climate of the respective regions.

3. To center the attention and interest of scientists and others, through the stimulus of this national search for outstanding agricultural contributions, upon the importance of agriculture in the nation's economy. This, in turn, may bring a resultant up-swing in basic agricultural research, for the long-range betterment of rural life."

The Regional Committeemen are instructed to consider contributions in the following scientific fields: agronomy, bacteriology, biochemistry, biology, all phases of botany, chemistry, entomology, forestry, genetics, nutrition, soil science, veterinary science and zoology.

According to the news release other information is quoted as follows:

"The Committee has discretion to go outside these fields for a nominee if they consider it desirable to do so. Also, they are not confined to nominations within the geographical borders of their own region. The 'regional' nature of their personnel is to make sure that all parts of the country are covered, in the manhunt for the scientist meriting the Award.

"After all the nominations are in, the South Carolina Committee will screen them, and obtain and sift any additional supporting evidence that may be pertinent to the claims. It then will make, not later than February 15, a report listing its top three contenders for the Award, to the Advisory Committee of the Texas Research Foundation. The Advisory Committee will further narrow the choices of all Regional Committees to nominations which are recommended to the Awards Committee

for selection of the recipient of the Award.

"The Awards Committee is to be named by the trustees of the Hoblitzelle Foundation, and consist of na-

tionally recognized scientists, agricultural leaders and laymen. The Award will be made next May at the annual Open House of the Texas Research Foundation.



***RESULTS BUILT THIS HABIT...**

For Best Results With LEGUMES Inoculate With NITRAGIN

THE ORIGINAL LEGUME INOCULANT

Read Guarantee - PACKED WITH BILLIONS OF LEGUME BACTERIA

HIGHEST QUALITY AT LOWEST COST

* Survey of Iowa soybean growers showed 91% inoculated every seeding. Among those expressing preference, NITRAGIN led all other brands 3 to 1.

* Elmer Cheatwood, Georgia, made this two acre test. One acre's corn followed inoculated cover crop—on other acre no cover crop was used. 56.3 extra bushels of corn came from acre following inoculated lupine cover crop.

* Walter Latham, Ohio, proved how NITRAGIN inoculation prevents wasteful land use. Area not inoculated was a failure. Inoculated section, a lush success. Second cutting exceeded the first.

● When you work valuable land and plant expensive seed, you want results. Failures cost in time and money . . . lost crops ruin planned grassland rotations. To help assure legume success, wise farmers inoculate every planting. Inoculated legumes produce better growth of protein-rich hay . . . abundant seed yields. That's why most agricultural authorities agree—and farmers insist on regular practice of legume inoculation. It costs so little—pays so much. For more than 50 years, more farmers have used NITRAGIN than any other inoculant. They buy it with confidence because NITRAGIN gets results. If you want bigger, better legume yields . . . if you want your soil to have more production power—always inoculate all legumes with NITRAGIN. Get the habit that gets results. Get NITRAGIN from your seedsman . . . in the orange-colored can.

THE NITRAGIN CO., Inc. • 3929 N. Booth St. • Milwaukee 12, Wis.

PASTURES MAKE PROFITS

(continued from page six)

tein supplement, adds the lacking protein. Even the hay that has been rained on while curing should be kept. All roughages should be salvaged. They will save the expense of high-priced feeds.

Reserve permanent pastures are another solution coming into recognition. The crimson clover-bermuda grass rotation is an excellent example. In the fall, after the first killing frost, the bermuda will die back. The remaining litter, when fed with a protein supplement, will keep the animals fat, for a 40 percent supplement, fed at the rate of 1 or 2 lbs. per head per day, makes the litter two or three times as valuable, and the animals need roughage and energy to offset the cold. The animals can be kept away from the small grains, or ladino-fescue, or other winter grazing crops for a longer period of time. More reserve permanent pastures and hay plus

the protein supplement seems to be the answer. Incidentally, the supplement should be purchased early in the season before the price rises. If excess hay is had at the end of the winter, it can be fed to the animals during the early spring, leaving more of the grain and clover acreage for seed production.

We still have a much shorter period in which we have to supplement our winter grazing than do other sections of the country. We must, nevertheless, be respectful of old man winter and make allowances for him in order that our winter pastures will not be over-grazed and will flourish again in the spring after the severe period has passed.

CO-OPS AID THE FARMER

(continued from page sixteen)

As to the fourth charge, no reliable information is available to show that communists are in the cooperative movement. This charge is obviously sheer propaganda.

At the present time, it is difficult to predict the eventual outcome of this battle between cooperatives and private business-sponsored organizations; but should co-ops fall under these attacks, their fall will mean the destruction of something as American as our own backyard.

WATER WORKS WONDERS

(continued from page three)

the fact that water is heaviest at 39.2 degrees, that it becomes lighter as it cools and expands about 10 per cent when it freezes, ice would form first on the bottom of lakes and streams and life on the earth would be completely changed.

The rate of evaporation from bodies of water and from the soil and surface of vegetation after rains depends upon the temperature, dryness of the air and the velocity of the wind. Evaporation doubles for every 18 degrees increase in temperature. Usually evaporation is high when

(continued on next page)

SPARTAN GRAIN & MILL CO.

for more than 35 years

Manufacturers of

**SPARTAN QUALITY
FEEDS**

for Poultry

and Livestock

FIRST PRIZES

for

CAKES, BISCUITS, ROLLS, & BREAD

1950 South Carolina State Fair



ADLUH FLOUR

IT'S TABLETESTED

Made in South Carolina by

Allen Brothers Milling Co.

COLUMBIA

GREENWOOD

WATER WORKS WONDERS

(continued from preceding page)

rainfall is low and vice versa. Every inch of water lost by evaporation during a dry summer is as detrimental as an inch less of rainfall received.

Transpiration represents the water that plants use. Evaporation depends upon heat. Transpiration depends on heat, sunlight and, of course, available moisture. Dense forests do not produce heavy rainfall but heavy rain produces dense forests. Most plants lie dormant until the sun has warmed the air to 42 degrees. The amount of water required to produce one pound of dry matter varies from 200 pounds for pine trees to 600 pounds for deciduous trees, grains, potatoes and sugar beets and 830 pounds for clovers and alfalfa. This means that it requires 1,495,800 pounds or 747.9 tons of water to produce one ton of alfalfa hay. All the water transpired by plants comes from the soil through the plant roots.

When soils are fully saturated, about 5 inches of water is held per foot of soil. Gravity moves water downward; capillary forces move water up or down or sidewise toward the drier areas with a force more than a thousand times as great as gravity.

Infiltration is the term used for that portion of rainfall that is absorbed by the soil. The ground water provides all the moisture used by plants, the domestic water supplies of farm families and the water for small cities and for many industries. The run-off of rainfall can be greatly influenced by soil conservation practices. The maintenance of a vegetative cover of trees or pasture plants is the most useful methods for decreasing run-off on sloping lands.

The soil conservation research laboratory at Clemson has found great differences in the run-off and soil losses on bare plots and plant covered plots in 1935.

Soil erosion and heavy run-off are

no special conditions of the South. The Soil Conservation Service Experiment Station reports run-off results for five rainy days in 1934-35 on plots in corn, clover and blue grass at their LaCrosse, Wisconsin Experiment Station.

The Piedmont region of South Carolina and Georgia is located in one of the heaviest rainfall sections in the United States. The close cultivation of cash crops during the summer months with bare soils in winter has about ruined our farms. Improved summer and winter pastures used under controlled grazing practices can make this warm climate and heavy rainfall our greatest assets for profitable dairy and livestock enterprises. The run-off will be converted to infiltration to eliminate the effects of summer drouths, raise the water table of the area, and clear the mud from streams to make better opportunities for industries and more prosperous farms.

Suni *Citrus Pulp*

is popular with

progressive

Dairymen

because . .

1. IT is an excellent cattle conditioner.
2. IT will take the place of BEET PULP.
3. IT has a tonic effect upon the animal.
4. IT will produce good milk flavor.
5. IT is a bulky and succulent feed.
6. IT contains 1520 pounds of digestible feed per ton — therefore a cheap source of digestible nutrients.

"They Moo for More"

SUNI - CITRUS is rich in milk-making units, brimming with bovine health and happiness. That's why . . .

Cows Love SUNI-CITRUS PULP

"It Woos the Moos"



SUNI - CITRUS PRODUCTS CO.

HAINES CITY, FLORIDA

Sales Agent: ASHCRAFT-WILKINSON CO., ATLANTA, GA.

CLIMATE VERSUS PESTS

(continued from page four)

In the northern part of the United States and in Canada, the grain and grass rusts produce red spores capable of infecting growing grains and wild grasses up to the end of the growing season. At the time of the red-spore stage, grain, both volunteer and fall-sown, has started, and grass has begun to "green up" in southern Kansas, Oklahoma, and Texas. The spores and grain would seem to be far enough apart so that "never the twain shall meet." Climate and weather bring the two together.

Dependent as it is on climatic and weather conditions and forces beyond man's control, the situation at first glance seems entirely uncontrollable. Like many other problems, however, it becomes less awe inspiring when reduced to its simplest terms. The four primary elements that must coincide to induce a devastating rust epidemic have been noted.

Temperature and moisture, elements of weather, are beyond control; nothing can be done except talk about them. The amount of inoculum and the acreage of susceptible host plants, on the other hand, are vulnerable and subject to attack. Substantial progress already has been made in curtailing their menace. The stem-rust-resistant spring wheat, Thatcher, bred in cooperative experiments in Minnesota occupied in 1940 some 17,500,000 acres in the hard red spring wheat areas of the United States and Canada. The new rust resistant wheat developed by the cooperative research in Texas is used to eliminate over-wintering infections in the South. This not only protects the Texas wheat crop but will cut off inoculum from susceptible varieties grown to the north and east. Similarly, new stem- and leaf-rust-resistant varieties of oats and barley are being introduced that will insure these crops against the new biological races of rust.

EGGS FROM THE AG. HOUSE

Lady: "You should clean up your column."

Columnist: "Lady, you should clean up your mind—or quit reading it."

1st: Take one artist. Then take another. What do you have?

2nd: I don't know.

1st: A pair of drawers.

An old timer used to say—It's heck to lose your gum in a chicken house.

"What do you do all day?" asked the tourist.

"Hunt and drink," replied the native.

"What do you hunt?"

"Drink."

Little Willie, cute but dumb.

Gauged his eye out with his thumb.

"Mercy on us," screamed the mother.

"Hell," said Bill, "I got another."

TAKES TIME

Farmer: "This is a tobacco plant in full flower."

Young thing from the city: "And how long will it be before the cigarettes are ripe?"

These new synthetic stockings made out of coal, wood and rubber are going to be mighty confusing for women. When they get a run, they won't know whether they're got a clinker, a splinter or a blow-out.

SAME FOR ALL

"But, Doc," argued the sailor, "I'm only here for an eye exam. I don't have to take off my clothes for that."

"Strip down and get in line," shouted the pharmacist's mate.

The sailor obeyed, but kept on grumbling. The chap in front of him finally turned around and said, "What are you kicking about? I only came here to deliver a telegram!"

SHOULD BE PUNISHED

Then there was the mamma kangaroo who reached into her pouch, withdrew her two youngsters, bumped their heads together and said, "How many times must I tell you not to eat crackers in bed?"



Armour Quiz . . . Test your knowledge!

How many of these questions on the livestock and meat packing industry can you answer?

Questions

1. How many meat packers buy farm livestock?
☐ 4 ☐ 400 ☐ 4,000
2. Who are the cleanest people on earth on the basis of soap usage?
☐ Dutch ☐ Americans ☐ Chinese
3. About how many pounds of meat did the average American eat in 1950?
☐ 130 ☐ 145 ☐ 170
4. How many people own Armour and Company?
☐ 350 ☐ 3,500 ☐ 35,000

Answers

1. Armour and Company is one of 4,000 packers competing for supplies of meat animals.
2. Americans use the most soap—25 pounds per person per year. (Dutch, 24 pounds; Chinese, 20 ounces). Americans are fortunate in having plenty of soap as a by-product of animal agriculture and meat packing.
3. The average American ate a little more than 145 pounds of meat last year.
4. There are approximately 36,000 Armour shareholders.

ARMOUR

AND COMPANY

Union Stock Yards • Chicago 9, Illinois

How 700 Factory Tests help keep *McCormick Drills* "First in the Field"

A report to you about men and machines that help
maintain International Harvester leadership



Seeding test makes drills prove accuracy. See the wheat these fluted feeds are measuring into individual boxes. It's carefully weighed to make sure all feeds sow uniform quantities of grain. The total weight of this grain must check with seed index settings. This is one of over 700 tests and inspections that safeguard the dependable field performance of McCormick grain drills.



Feeds are checked 14 different ways. Here are the gauges that IH inspectors use to insure peas-in-the-pod sameness of McCormick fluted feeds. The feed cup, fluted roll, shut-off block, and dump bottom are individually checked. Every fluted feed must pass this tough 14-point inspection. This is in addition to many visual inspections at every step of manufacture.



Openers must be perfectly aligned. Single-disk openers are assembled on a fixture that holds all parts in proper relationship. Undercut and angle of draw are built into each assembly. No further adjustment is needed in the field. Three gauge points provide visual proof of perfect opener alignment. All gauges that uphold IH standards are frequently measured against master gauges.



Three thousandths of an inch is too much! Here is a workman measuring the diameter of a wheel hub. It can't vary more than two thousandths of an inch from IH standards. Rigid inspections like this constantly measure quality, but good workmanship maintains it. This pride in a job well done has made the IH trademark a symbol of *extra* value for over a century.



INTERNATIONAL HARVESTER

Chicago 1,
Illinois

International Harvester Builds McCormick Farm Equipment and Farmall Tractors ...

Motor Trucks ...



Crawler Tractors and Power Units ...



Refrigerators and Home Freezers ...



Campus Interviews on Cigarette Tests

NUMBER 4 . . .

THE PANDA



*"Let's get
down to
bear facts!"*

The sudden rash of quick-trick cigarette tests may have caused panda-monium on the campus—but our scholarly friend was unperturbed. He pondered the facts of the case and decided that one-puff or one-sniff tests

... single inhale and exhale comparisons are hardly conclusive. Proof of cigarette mildness doesn't come that fast! And that's exactly why we suggest . . .
THE SENSIBLE TEST—the 30-Day Camel Mildness Test which simply asks you to try Camels as your steady smoke—on a pack after pack, day after day basis. No snap judgments needed. After you've enjoyed Camels—and only Camels—for 30 days in your "T-Zone" (T for Throat, T for Taste), we believe you'll *know* why . . .

**More People Smoke Camels
than any other cigarette!**



THE
AGRARIAN

OFFICIAL STUDENT PUBLICATION



March 1951

South Carolina

Clemson College



the "Green Thumb"

**COMES
NATURALLY
NOWADAYS!**

Practically every community *had* one—the man with a "green thumb."

He could make 'most any kind of plant thrive anywhere.

"Making things grow just comes naturally for John," folks agreed. Some said, "He plants in the light of the moon," while others maintained that he performed this task in the *dark* of the moon.

But what most of them overlooked was that "John" simply had the knack for getting things done at the right time—in the right way.

Nowadays, the "green thumb" comes naturally to farmers who have outfitted their

farms with modern equipment . . . their crops get off to a fast start and produce bumper yields, because now they, too, can get their work done at the right time—in the right way!

Today, hundreds of thousands of John Deere equipment owners all over the country enjoy the benefits of farming with modern machinery. They do more work easier . . . better . . . faster than ever before. Production costs are lower . . . profits are greater. Most important, granaries, cribs, haymows, and storehouses across the nation are bulging at harvest time. Truly, this is work of the "green thumb" at its best!

JOHN DEERE
MOLINE • ILLINOIS



THE AGRARIAN

Vol. 10

THE CLEMSON AGRICULTURAL COLLEGE

No. 3

IN THIS ISSUE

Between the Furrows	6
Eggs from the Ag House	11

THE ADVERTISERS

John Deere	Inside Front Cover
Spartan Grain & Mill Co.	2
Pendleton Oil Mill	2
Ashcraft-Wilkinson Co.	2
Allis Chalmers Co.	3
Kingan & Co.	4
J. I. Case Co.	5
Woolfolk Chemical Works, Ltd.	8
Planters Fertilizer & Phosphate Co.	9
Hercules Powder Co.	10
Progressive Machine Works	11
Armour and Company	12
International Harvester	Inside Back Cover

THE STAFF

Harry M. Lightsey, Editor
Frank Flowers, Assistant Editor
Robert T. Dunlap, Advertising Manager

ASSOCIATE STAFF

Managing Editor ---- Quimby Jowers
Business Manager ---- George Stanley
Circulation Manager ---- Bob Johnson
Chief Photographer -- L. G. Trimmier
Asst. Adv. Mgr. -- R. T. Hollingsworth

DEPARTMENT EDITORS

Agronomy ----- A. B. Sibley

Agri. Engineering ----- R. M. Prince
Animal Husbandry ----- Andre Roux
Dairy ----- D. K. Fricke
Entomology ----- A. C. White
Horticulture ----- S. L. Sims
Poultry ----- H. N. Rawl
Forestry ----- R. E. Farmer
Reporters ----- J. W. O'Cain,
J. T. Green, Peter McCall

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Education of the School of Education.—Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising rates: one-fourth page, \$15.00; one-half page, \$28.00; one page, \$50.00.

All correspondence should be addressed to THE AGRARIAN, Clemson College, Clemson, S. C.

No article may be reprinted without permission.

Subscription free on request.

SPARTAN GRAIN & MILL CO.

for more than 35 years

Manufacturers of

**SPARTAN QUALITY
FEEDS**

for Poultry

and Livestock



**PENDLETON
FERTILIZERS**

MADE BY

Pendleton Oil Mill

PENDLETON, SOUTH CAROLINA



Suni Citrus Pulp

is popular with

progressive

Dairymen

because . .

1. IT is an excellent cattle conditioner.
2. IT will take the place of BEET PULP.
3. IT has a tonic effect upon the animal.
4. IT will produce good milk flavor.
5. IT is a bulky and succulent feed.
6. IT contains 1520 pounds of digestible feed per ton — therefore a cheap source of digestible nutrients.

"They Moo for More"

SUNI - CITRUS is rich in milk-making units, brimming with bovine health and happiness. That's why . . .

Cows Love SUNI-CITRUS PULP

"It Woos the Moos"



SUNI - CITRUS PRODUCTS CO.

HAINES CITY, FLORIDA

Sales Agent: ASHCRAFT-WILKINSON CO., ATLANTA, GA.

Allis-Chalmers' latest

the **NEW**

CA with 2-bottom mounted plow . . .

the

WD with **NEW** 3-bottom mounted plow



Here they are — the popular WD Tractor and its close-coupled *three*-bottom plow — and the new CA Tractor stepping out with its companion *two*-bottom plow.

In keeping with Allis-Chalmers policy, our power rating of these tractors is conservative. In extreme conditions, no, but in average soils, yes, they will handle these plow loads.

Both tractors are equipped with **Hydraulic Traction Booster** that makes possible more actual drawbar pull. Automatically the Booster increases weight on drive wheels to match the load.

Both have **Power Shift Wheel Spacing** that instantly adjusts rear wheel width by engine power.

Both have **Two-Clutch Power Control** (standard on WD, optional on CA). An auxiliary hand clutch halts forward travel without interrupting the power flow to power take-off machines.

In addition, both tractors are distinguished by many other advanced engineering and operating features. And to further their usefulness on all types of farms, there is a wide range of specially designed implements — mounted, semi-mounted and trailed-types — in many sizes and combinations.

Both the new Model CA and the WD have a 4-speed transmission, built-in hydraulic control system for implements, hydraulic shock-absorber seat, low-pitch muffler, power take-off, drive pulley, lights, battery, starter.

TUNE IN
The **NATIONAL**
FARM and HOME HOUR
Every Saturday • NBC

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Since



1845

This trademark is your guarantee
of highest quality in meats!

Kingan's
R E L I A B L E

Beef - Veal - Pork - Ham

Tender Smoked Hams

Self-Service Luncheon Meats

Tasti-Cooked Hams

Canned Meat Products

Fresh and Smoked Sausage

Lard and Shortening

Sliced or Slab Bacon

U. S. GOVERNMENT INSPECTED

When you buy Kingan's . . . You buy the best!

**BUYERS and PROCESSORS
of LIVESTOCK**

Kingan & Co.

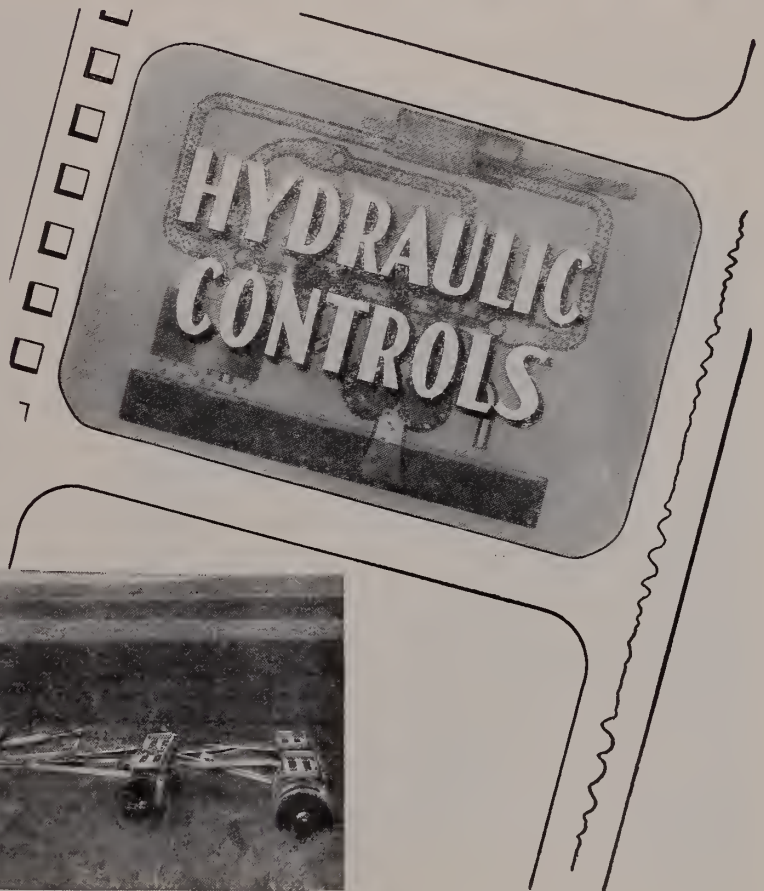
ORANGEBURG, SOUTH CAROLINA

Main Plant and General Offices: Indianapolis, Indiana

16-mm. MOVIE in Sound and Color

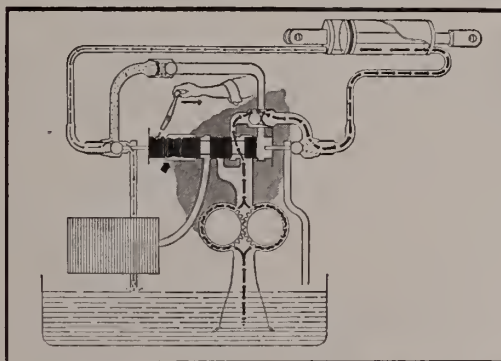
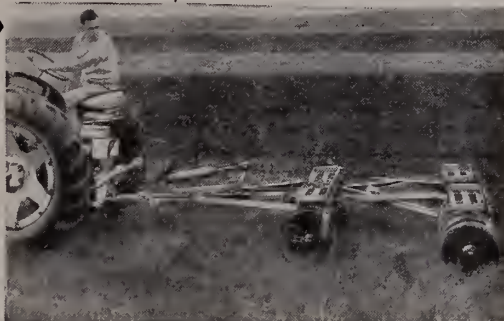
.... AVAILABLE WITHOUT CHARGE

Today's farm is not fully modern unless its tractor and field machinery are equipped with hydraulic controls. Everyone associated with agriculture naturally wants a clear understanding of them—both "what" and "why." Every ag student and instructor who sees this movie will find it a profitable 15 minutes. An illustrated 16-page take-home booklet clinches what the film teaches, and is a valuable addition to personal reference files. Ask your instructor, department head, or club officer to schedule this interesting, fact-packed film.



WHAT THEY DO

By action scenes with a dozen or more implements and machines, "Hydraulic Controls" teaches solid lessons in conservation farming, in saving labor, time, and other farming costs. Disk harrows are angled and de-angled on-the-go, sparing grass in waterways and on headlands. Both mounted and pull-behind implements are given attention. Function of the portable hydraulic cylinder is demonstrated, as is the interchangeability of ASAE standard cylinders.



HOW THEY WORK

Animated mechanical drawings show valves as they open and close; the pump pumps and oil flows; the hydraulic piston moves in or out at the will of the driver. Clear pictures and plain language make the workings of hydraulic controls easy to understand, hard to forget. The companion booklet of the same title can be studied at home and in class.

Case Visual Education Materials
Sound-slide films, 16-mm. movies in sound and color, booklets, wall charts and posters—all offered at no charge. Useful in teaching soil and water conservation and the best in modern farm methods. Send for free booklet "Case Visual Education Materials." It lists and describes each, tells how to order. A real help to instructors and club officers in planning teaching or program schedules. Address nearest branch or Racine office.

CASE

Films are loaned and booklets provided without charge to agricultural colleges and appropriate groups—extension workers, county agents, vocational agriculture teachers, student clubs. College instructors and student groups are invited to schedule this movie through their nearest Case dealer or branch, or to write to Educational Division, J. I. Case Co., Racine, Wis.



UN FLAG AT CLEMSON

During United Nations week Christie Benet former chairman of the board of trustees presented the UN flag to President Poole. This emblem



now flies under the Stars and Stripes on the college flagpole as a reminder that many Clemson men are fighting in Korea. In the background are members of the board and officials of the college administration.

FROM BOMBERS TO BOLL WEEVILS:

L. M. Sparks, Jr., Class of '41 Immediately upon his separation, after 5½ years in the Service, "Mac" returned to Clemson in January of 1947. At the time of his separation from the Air Force he was a B-29 pilot. He joined the Clemson Extension Service as an Entomologist and now has the title of Extension Specialist, Cotton Insects and Diseases.

"THE CHEESE STORY"

Clemson College now owns the historic Stump House Mountain, the widely-known experiment house for the manufacture of Roquefort blue-mold cheese. As a result of Clemson's bid of \$1,201 at a public auction at Walhalla, South Carolina, Clemson Agricultural College became sole owner of the tunnel, the former "dream project" of transportation.

The old, unfinished railroad line, located between Walhalla and Mountain Rest, has a very interesting history including various murders, money disputes, etc. But, in spite of the once thought "wasted effort" in building a train passageway, old Stump House Mountain has become an important laboratory in the new South Carolina industry of cheese making.

—Joe O'Cain

PLANS SHAPING UP FOR FARMERS' WEEK

The annual South Carolina Farmers' Week, which attracted thousands of people from all sections of this state last year, will be staged at Clemson during the week of August 13-17 according to Dr. R. F. Poole, president of Clemson.

Acting again as the general chairman of the Farmers' Week Committee will be Thos. W. Morgan, assistant director of the Clemson Extension Service. Mr. Morgan will have the responsibility of getting various committees who will make plans for the affair. Activities planned for the week will include the presentations of the latest information on all phases of agriculture. The general pattern for the week's program will likely follow the one used during the past three summers.

Featured on the week's program will be outstanding speakers, lectures, interesting music and other entertainment. New and improved machinery will be displayed to create interest to visitors at Farmers' Week.

Housing and meals will be available for farm families during this week who live at some distance from Clemson.

—Joe O'Cain

THE FURROWS



GRADUATE SCHOOL UNDERWAY

The Clemson Agricultural College entomology and zoology departments have "thrown their two cents worth" into the surge of improvements which have given the campus a "new look." These departments have opened a graduate school which offers courses leading to a master of science degree in entomology and zoology. This new addition to Clemson's curricula will give the scholastic phase of the college a face lifting to match some of the renovations which have been made on the campus.

The creation of a graduate school for the departments of the School of Agriculture was approved by the graduate committee and college and was opened in the fall of 1950. The School of Agriculture can now offer Clemson graduates and also graduates from other institutions the opportunity to pursue a master of science degree in zoology or entomology here at Clemson.

Under the present assistantship plan a maximum of three students will be enrolled in the program. As the school expands or as more assistantships are made available by the college or by business firms, the program will be enlarged to accommodate more students. This year the department has only one student in the graduate school, Mr. James Boykin. Mr. Boykin who is majoring in zoology, is at present a laboratory instructor. Competition for admittance to the graduate school is expected to be very keen in the next four years due to the limited number of positions available.

There are twelve graduate courses being offered in the entomology department and six are offered for specialization in zoology. The entomology curriculum is composed of two courses in economic entomology, insect morphology, research techniques and methods, insect taxonomy, parasitology, advanced morphology advanced systematic entomology, medical entomology, insect toxicology, insect physiology, and research. The subjects offered by the Zoology Department are; advanced

Zoology, Vertebrate Zoology, Animal Physiology, Histological Techniques, Economic Zoology, and Research.

The graduate school will make it possible for Clemson to turn out more men with a higher education; and the more of this kind of work the college can do, the higher its prestige will rise and be recognized in the world.

—R. M. North, V.A.E. 1954

PRICES TOO MUCH OF A PROBLEM

The ever-changing situation of prices is even too much of a problem for the Clemson Economic Department to give an explanation! In a very attractive graph located in Long Hall, which was "fixed up" by the economic group, a big red question mark adorns the 1950-1990 section of this scaled chart.

Several new bulletins now available in the library's bulletin room will be of interest to many. Mr. W. B. Albert of the Experiment Station has put out an interesting bulletin on "Chemical Weed Control In Corn and Cotton." Other bulletins include "Cotton Production; Insect and Disease Control in S. C., 1951." A report of the 1950 cotton contest is also to be found in this bulletin. Also among other especially interesting bulletins is "Turkey Production Equipment" which is prepared by poultry extension workers and extension turkey specialists.

AG GRADUATES APPOINTED TO POSITIONS

Two 1951 graduates of Clemson College have already been appointed to important agricultural positions. Mr. Marrett Outz has been appointed assistant county agent of Anderson County; and Chas. G. Newton, Jr., has been appointed assistant county agent of Darlington County.



THE MARK OF
QUALITY :- DEPENDABILITY :- SERVICE
FOR OVER 25 YEARS

Insecticides - Fungicides - Wood Preservatives
Weed Killers - Soil Fungants - Grain Fumigants

FORMULATED TO MEET

EVERY NEED

Dusts - Wettable Powders - Solutions - Liquids
Emulsifiable Concentrates - Emulsions

See Your Security Brand Dealer for Pest Control Problems.
The Answer Lies in the 150 Security Brand Products Used for

PEACHES	COTTON	CATTLE
APPLES	TOBACCO	HOGS
SMALL FRUITS	TRUCK CROPS	POULTRY
ORNAMENTALS	GARDEN	HOUSEHOLD

WOOLFOLK CHEMICAL WORKS, LTD.

MANUFACTURERS

FORT VALLEY, GA.

**SERVING THE FARMERS
of
NORTH and SOUTH CAROLINA
SINCE
1906**



**PLANTERS
Fertilizer & Phosphate
Company**

Charleston, S. C.

3-7267

Charlotte, N. C.

2-1086

Look Ahead to Healthy Crops

WITH THESE FREE BOOKS
ON INSECT CONTROL...



Healthy fields mean profitable yields! One good way to get the most out of seed and labor is through a sound program of insect control with toxaphene insecticides. Approved by the U.S.D.A. for grasshoppers, and by leading cotton-growing states for the control of all important cotton pests, low-cost toxaphene dusts and sprays are also being used effectively against an increasing variety of insects that attack other crops. This collection of books on insect control includes detailed recommendations on specific insects and a summary of latest federal or state recommendations. Write today for your free copies.



HERCULES POWDER COMPANY

911 King Street, Wilmington, Delaware

MAKERS OF TECHNICAL TOXAPHENE FOR AGRICULTURAL INSECTICIDES

NX51-5

toxaphene

DUSTS SPRAYS

POTATOES—POTATOES

The editor of a small-town New England newspaper was having trouble in raising the circulation of his publication and at last hit upon a scheme. He started a contest by giving a year's subscription for the largest potato raised in his county.

Several weeks later a friend said: "Ben, did you boost your circulation any by that potato contest you're running?"

"Well, I don't know," grinned the editor in reply, "but I'm all set for the winter."

"What do you mean?" asked the puzzled friend.

"Well, I don't have to worry about potatoes," answered the editor. "Down in my basement I've got fifteen barrels of samples."

TO MY LATE WIFE

These be your words

As you enter Perdition,

"Perhaps it would start

If you'd turn the ignition."

GREEN THUMB

The city man had purchased a home in a small community. One day as he browsed about his yard, he found the bodies of two baby birds that had fallen from a nest. He proceeded to bury them in the garden under the critical gaze of his neighbor's five-year-old son. When he had finished, the youngster looked at him strangely.

"What a dopey thing to do!" the boy said scornfully. "They won't grow."

"FOUL WARNING"

'Tis most too late, my turkey friend,
To gobble, gobble in your pen,
For the old wooden block is waiting
Outside your prison den.

EVENTUALLY

I always listen to advice,

I'm quite sure that I need it,

And some day—if I live that long,

I'm certain that I'll heed it!

MARITAL NOTE

Everything is love and kisses,
Till your girl becomes your Mrs.

BRIDE

He swung her lightly o'er the sill.

Now she housekeeps with a will.

And he's the god to whom she brings

Thrice daily her burnt offerings.

WESTERN ETIQUETTE

A man traveling in the heart of Texas found himself in conversation with a Texas cowboy. The Texan confessed that he was 87 years old, whereupon the traveler said:

"Tell me, to what do you attribute your remarkable longevity?"

The Texan thought for a moment and then spoke gravely.

"Well," he replied, "I never stole a horse and I never called a man a liar to his face."

IDEA FOR TAX DEDUCTIONS

A budget is a record of how you spent your money.



CONNOR ELECTRIC CALF DEHORNER

designed
by

Clemson
Dairy
Department

MANUFACTURED
BY

PROGRESSIVE MACHINE WORKS -- ANDERSON, S.C.

It's a dollar and sense wedding.
What do you mean?
He hasn't a dollar, and she hasn't any sense.

Smith: I went to a hotel for a change and rest.
Jones: Did you get it?
Smith: The bellboy got the change, and the hotel got the rest.

Tommy: That mouth organ you gave me for my birthday is the best present I ever got.
Fond Aunt: I'm glad you like it.
Tommy: Oh yes, mother gives me a quarter a week not to play it.

All the world loves a lover until he complicates the parking problem.

Teacher, conducting a grammar lesson, had written a sentence on the blackboard: "I ain't had no fun this summer."

"What should I do to correct this?" she asked.

Precocious Junior: "Get yourself a boy friend!"

He: I've never said anything that I would regret later.

She: Has it paid?

He: Yes, I'm still a bachelor.

An economist is someone who plans what to do with someone else's money.

Lillie: So Helen gave her boy friend the sack.

Rose: Yes, but she kept the presents that came in it.

Husband: What became of the bill Dunn & Co., sent us?

Wife: Oh, I sent it back marked "Insufficient Funds."

Draft Director Hershey: A boy becomes an adult three years before his parents think he does—and about two years after he thinks he does.

It's always the fresh egg that gets slapped in the pan.

It takes two to make a marriage. A single girl and a nervous mother.

'Tis Thanksgiving Time again, you know . . .
It comes but once a year!
I know that your "beheading" will Be awfully hard to bear.

So when that last great moment comes—
Oh, do not sorrow yet—
For your drumstick will bring much joy
To any Clemson cadet.

Simpson (on the phone)—Say, I got a leak in my basement!
Plumber — Well, go ahead; it's your basement!

While looking around,
Miss Betty Bound.
Found her Ma's corset in the garret.
She tried it for fit,
Then she said great wit,
I don't have the guts to wear it!"

Nine-year-old Edna was just crazy about school, while her younger brother was considerably less enthusiastic. One day the little girl suggested that they play school. The lad absolutely refused to cooperate. However, when Edna threatened to tell their mother, the boy weakened a bit.

"Well, all right," he agreed grudgingly, "but let's play I'm absent."



Armour Quiz . . . Test your knowledge!

See if you can answer these 4 questions about the meat-packing industry.

Questions

1. How many cuts and kinds of beef do meat packers get from a single steer?
☐ 25 ☐ 45 ☐ 75
2. How much of the average beef steer "on the hoof" is meat?
☐ 45% ☐ 55% ☐ 63%
3. How much profit did Armour and Company make on each pound of meat sold in the 1950 fiscal year?
☐ 17¢ ☐ 1.7¢ ☐ 0.17¢
4. How many meat packers are there in the United States?
☐ 40 ☐ 400 ☐ 4,000

Answers

1. Depending on weight and grade, Armour and Company gets as many as 75 different cuts and kinds of beef from a single carcass.
2. The average beef steer has a dressing percentage of about 55%.
3. In 1950, Armour and Company made 0.17 of one cent on each pound of meat sold.
4. Armour and Company is one of 4,000 meat packing companies in the United States.

ARMOUR

AND COMPANY

Union Stock Yards • Chicago 9, Illinois

How tropical fibers become top-notch IH twine

*A report to you about men and machines
that help maintain International Harvester leadership*



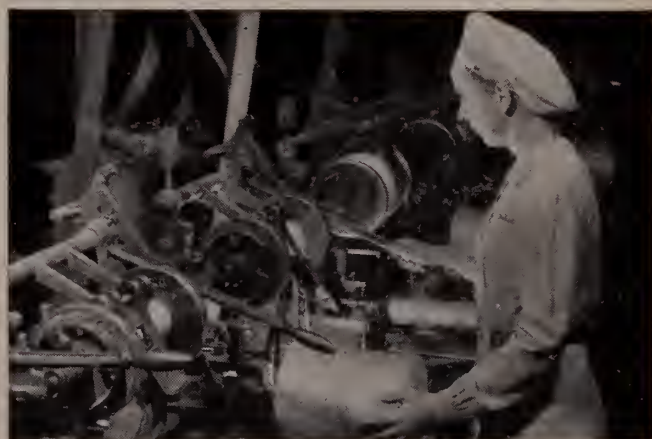
Only 30 henequen leaves in 1,000 will do for IH twine. To maintain such high standards, International Harvester operates its own plantation. Here's a native worker harvesting choice, mature leaves from which henequen fiber for twine is extracted. After drying and bleaching, our factories transform it into famous IH twine.



Sliver test double-checks baler twine after henequen fiber from Cuba and hemp from the Philippines have been scientifically blended. An IH inspector is shown weighing a sample of blended fibers before spinning. This is to make sure it will produce high quality twine that meets exacting IH standards for length, weight and strength.



Twine must pass the break test before it can wear the IH trade mark. Quality-minded inspectors multiply normal field strains many times with tensile strength testers—record the pull twine withstands before breaking. They also check uniformity and evenness of strand attained by combing the blended fibers eight times.





Workers autograph each ball of twine. Balls of IH twine look like peas in a pod, but each one carries the name of a balling machine operator. This is one of many inspection checks and countless safeguards that protect the quality of IH twine from plantation to packaged product. International Harvester Company, Chicago 1, Illinois.



INTERNATIONAL HARVESTER

International Harvester Builds McCormick Farm Equipment and Farmall Tractors . . .

Motor Trucks . . . 

Crawler Tractors and Power Units . . . 

Refrigerators and Freezers . . . 



Campus Interviews on Cigarette Tests

Number 6...THE BEAVER

*"How eager
can they
get?"*



FOR once in his life, our fervent friend admits that eagerness can be over-done! He's alluding, of course, to all these quick-trick cigarette tests—the ones that ask you to decide on cigarette mildness after just one puff, one sniff, one inhale or one exhale! When the chips are down, he realizes cigarette mildness can't be judged in a hurry. That's why he made...

The sensible test... the 30-Day Camel Mildness Test which asks you to try Camels as your steady smoke—on a pack after pack, day after day basis. No snap judgments needed. After you've enjoyed Camels—and only Camels—for 30 days in your "T-Zone" (T for Throat, T for Taste), we believe you'll *know* why...

More People Smoke Camels
than any other cigarette!



10/4
AGRICULTURAL REFERENCE DEPARTMENT
CLEMSON COLLEGE LIBRARY

THE AGRARIAN

OFFICIAL STUDENT PUBLICATION



Farmers can eat their cake



...and have it, too!

Yes, modern conservation practices soon begin to repay their cost—enable farmers to eat their cake and have it, too. Controlling erosion helps to hold precious topsoil on the land and, at the same time, hoists farming profits.

Contouring, terracing, strip-cropping, and other soil-saving operations, which can be practiced with regular John Deere farm equipment, mend mismanaged or erosion-scarred land. Grasses and legumes, together with agricultural limestone and commercial fertilizers, rebuild soil productivity

in a hurry. This double-barreled program, recommended by agricultural authorities, enables soil conservation farmers to improve their places and, at the same time, raise bigger yields and enjoy better incomes than ever before.

Soil conservation, however, is more than a remedy for ailing acres or a recipe for bigger profits. It's a gilt-edged investment in America. By making our agriculture more stable and productive, modern soil conservation practices help to maintain our economic well-being and safeguard our national security.

JOHN DEERE



MOLINE, ILL.

THE AGRARIAN

Volume 10

THE CLEMSON AGRICULTURAL COLLEGE

Number 4

IN THIS ISSUE

An Ag Student's Day at Clemson	3
Was Darwin Right?	6
Agriculture Meets Industry	8
Welding Aids Farmer	9
Purebred vs. Crossbred	10
Fruit for Farmers	12
Are Chemical Fertilizers Really Harmful?	14
Between the Furrows	16
Invitation to Forestry	18
S. C.'s Pattern of Progress	20
Along Nature's Trail	25
Anti-Biotics Offer Poultry Pep-Up	26
Agrarian Philosophy	28
Carpets of Green	32

THE STAFF

Harry M. Lightsey, *Editor*

Frank Flowers, *Asst. Editor*

Robert T. Dunlap, *Advertising Manager*

ASSOCIATE STAFF

Managing Editor Quimby Jowers

Business Manager George Stanley

Circulation Manager Bob Johnson

Chief Photographer L. G. Trimmier

Asst. Advertising Mgr.
R. T. Hollingsworth

DEPARTMENT EDITORS

Agronomy A. B. Sibley

Agri. Engineering R. M. Prince

Animal Husbandry Andre Roux

Dairy D. K. Fricke

Entomology A. C. White

Horticulture S. L. Sims

Poultry H. N. Rawl

Forestry R. E. Farmer

Reporters J. W. O'Cain,

J. T. Green, Peter McCall

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education.—Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising rates: one-fourth page, \$15.00; one-half page, \$28.00; one page, \$50.00.

All correspondence should be addressed to THE AGRARIAN, Clemson College, Clemson, S. C.

No article may be reprinted without permission.

Subscription free on request.

Cleveland Feeds



*are carefully made of the best
ingredients according to formulas
carefully tested.*



Eagle Roller Mill Co.

Shelby, N. C.

SPARTAN GRAIN & MILL CO.

for more than 35 years

Manufacturers of

SPARTAN QUALITY FEEDS

for Poultry

and Livestock

CONNOR ELECTRIC CALF DEHORNER



designed

by

Clemson
Dairy
Department

MANUFACTURED

BY

PROGRESSIVE MACHINE WORKS — ANDERSON, S. C.



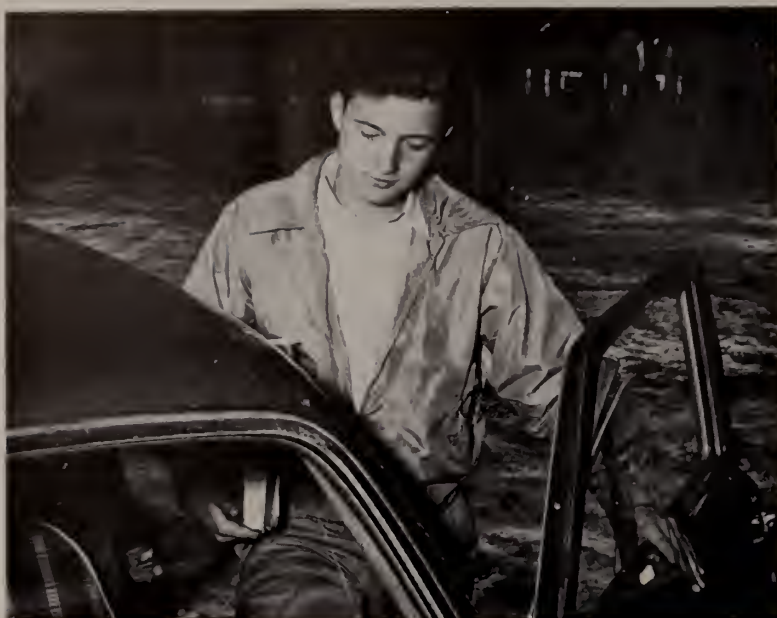
An Ag Student's Day At Clemson

This issue, *The Agrarian* has decided, for the interest of its readers, to present a picture story portraying a typical day in the life of a Clemson agricultural student. *The Agrarian* has selected as a representative student Mr. Winston Sibley of Greenville, South Carolina. Winston is a senior this year and is majoring in Animal Husbandry.

He has proved himself an outstanding student during his four years at Clemson. His scholastic record is excellent and he is a member of both Phi Eta Sigma and Phi Kappa Phi. In addition to this superlative scholastic achievements, Winston has given his time and service gladly both to the School of Agriculture where he is a member of Alpha Zeta, and to Student Government in which he is a class representative in the student assembly.

During his study at Clemson, Winston has received many honors. Last year, he was awarded the Danforth Fellowship Scholarship. Last summer he attended Mr. Danforth's Leadership Camp in Shelby, Michigan. This year he was awarded The Borden Company Foundation.

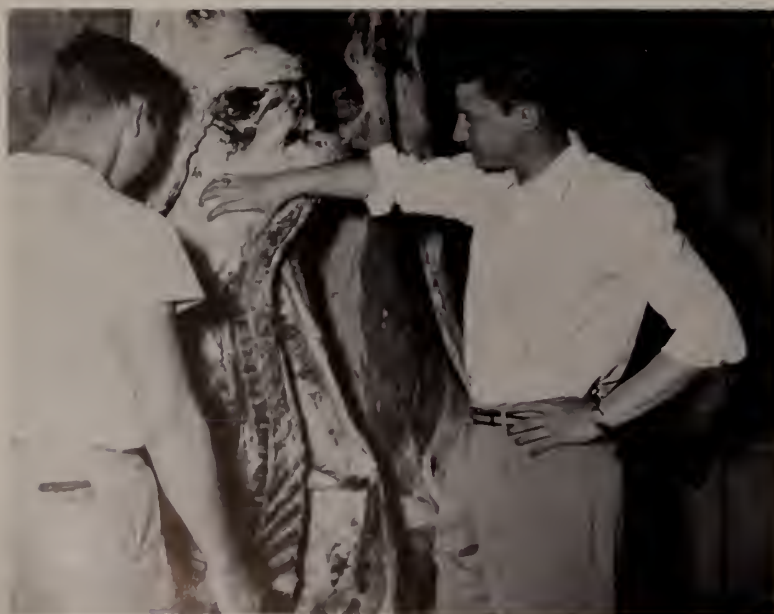
The Agrarian feels that Mr. Winston Sibley has been, as a student, an asset to his major and to this College, and it feels that he will maintain, after his graduation, the good name and traditions of Clemson College.



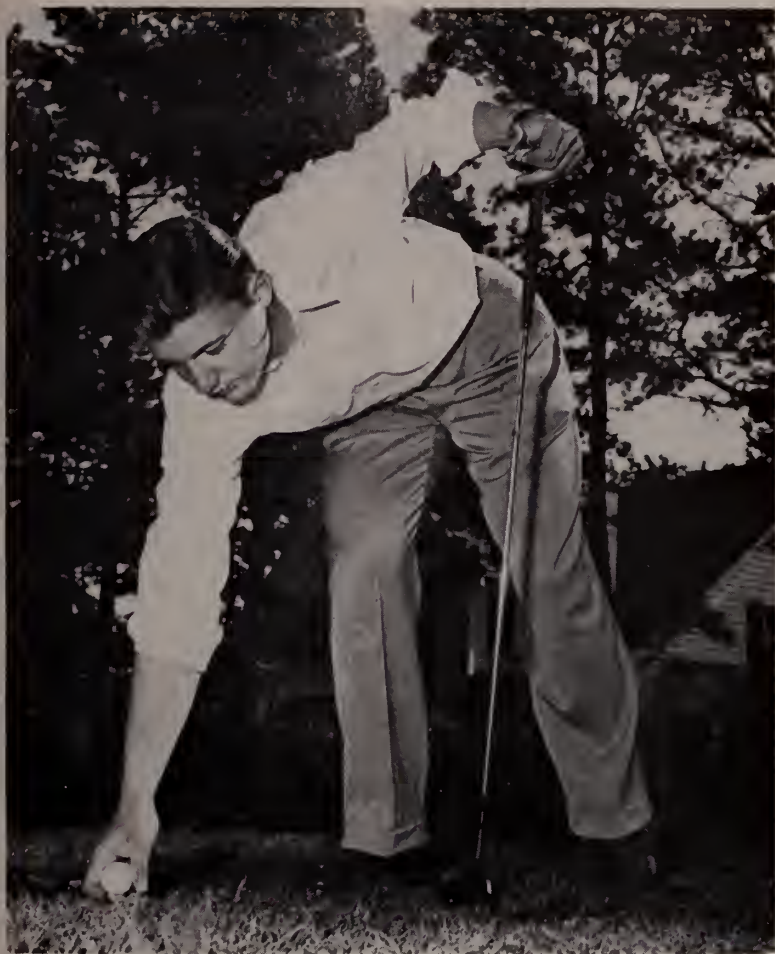
Early in the morning, Winston Sibley leaves for the campus to start another school day at Clemson.



After reaching the campus, Winston stops at Klutz's before he starts the routine of daily classes.



After morning classes, Winston spends the first part of the afternoon in Meats Lab.



Now for a relaxing, late afternoon of golf. Winston will probably finish with broken clubs, lost balls, and black thoughts.

The end of a long, full day, and Winston settles down to prepare himself for tomorrow's classes.



One of Darwin's principles was that all plants and animals reproduce faster than their subsistence, or in other words, that living organisms multiply faster than do their sources of food. As long as there are just a few living organisms of a species, everything is fine and the organism can find food:

WINSTON A. SIBLEY

Animal Husbandry '51

but as time goes on, population of that organism keeps increasing until there is competition for food, a constant struggle for life, and a survival of the fittest resulting from this struggle.

It may seem old-fashioned to go back to Darwin, whose work was published in 1850, but I believe that this principle of population overtaking food supply is definitely true, and it is a thing

mates produce active races, the powerful empires such as the Romans and the Greeks emerged. Today both of these countries are dependent upon the United States for food.

The great Roman Empire is today a bunch of crowded, hungry Italians. Mussolini went down in Ethiopia in 1939 to get food and more land for Italy. There are simply not enough Italian acres to support the Italians.

Practically all of Europe today is hungry—or would be if we weren't feeding them. Despite the war, Europe today has millions more than she has ever had.

It is getting them all. The mighty British today are on a worse diet than many European neighbors. Why? It is because their country is only 50% self-sustaining, and they have to import much of their food at high prices. England's meat shortage today is more than a meat shortage—it is a land shortage. There are over twice as many cattle per

WAS DARWIN RIGHT?

that is extremely important, it is a thing that is quite disregarded, and it is a thing that is applicable to man as well as to other organisms.

Food! No one can measure the battles that have been fought or the misery that has been suffered because of a lack of it. And going back to our principle, the cause of this is generally too much population for the land area to support. To put it another way, if an acre of land will support only one man and the population multiplies so that two must live on that acre, there's going to be trouble.

China was a great power centuries ago. Today she has millions in poverty trying to make a living out of an area of land that hardly produces food enough to support half that population.

India is in the same boat. Poor land combined with too many people makes for little hope for them. The newspapers today tell of her desire for some 2 million bushels of grain from some outside source.

Japan is now having a terrific food shortage. It is estimated that by 1960 she will have a 25% deficit of food and that she will never again be self-sustaining because of her population increase.

Palestine, Egypt—all of these old countries were once great powers and today are faced with poverty and hunger. Darwin's principle got them first, because they were the first to be inhabited by man; now let's see what it's done to Europe.

As early man learned how to combat the cold weather of northern winters, he moved upward into lower European countries and settled there. Since there was an abundance of resources (which in the long run means food) and since the colder cli-

capita in the U. S. than there are per capita in the British Isles. If it were not for her possessions, England as a power would be washed up.

The Black Plague, the venereal disease brought back by Columbus's men, and the numerous wars have cut Europe's population in half at times, but Darwin's principle of population over subsistence has kept creeping on.

For those of you who would send all of our food and natural resources to the poor, hungry, freedom-loving countries of the world, let me go on with my story.

In the late 15th century, man was able to conquer the great oceans, and thus in a few years pilgrims from Europe began to settle in the unknown land to the west. This country, the U. S., has had prosperity in her early years (and we must remember that she is not yet 200 years old)—prosperity even greater than the early Empires of China, Egypt, Rome, Greece, etc.; for besides having an abundance of natural resources to draw upon, she has had a democratic government, free enterprise, and modern science to further her.

But let's remember that I said the country is young and let's not forget Darwin. Have you ever thought that America's resources someday may not produce enough food to support a huge population—that there's a limit to the amount of food that an acre of land can produce?

America's birthrate today is 165% that of her deathrate. The United States has grown from 5.5 million people to 150 million in the last 50 years.

(Continued on Page 30)

Look Ahead to Healthy Crops

WITH THESE FREE BOOKS
ON INSECT CONTROL...



Healthy fields mean profitable yields! One good way to get the most out of seed and labor is through a sound program of insect control with toxaphene insecticides. Approved by the U.S.D.A. for grasshoppers, and by leading cotton-growing states for the control of all important cotton pests, low-cost toxaphene dusts and sprays are also being used effectively against an increasing variety of insects that attack other crops. This collection of books on insect control includes detailed recommendations on specific insects and a summary of latest federal or state recommendations. Write today for your free copies.

toxaphene

DUSTS SPRAYS



HERCULES POWDER COMPANY

INCORPORATED

911 King Street, Wilmington, Delaware

MAKERS OF TECHNICAL TOXAPHENE FOR AGRICULTURAL INSECTICIDES

NX51-5



Agriculture Meets Industry

ALAN SIBLEY

Agronomy '51

South Carolinians were taken aback by the news that the H-bomb plant was to be located at Ellenton and surrounding territory. Immediately raised was the question of why such a plant was to be located within the state.

Of course, the solution lay in the fact that the Savannah River provided the abundant water power needed.

South Carolina has a great industrial potential, and the recent expansion of factories in the South bears this out. But why has this potential remained dormant for so long, and what will its development mean to a state that has been predominantly agricultural?

From its beginning South Carolina has been an agricultural state, and the abundant rainfall, which now attracts industry, was looked upon as a

blessing for the farmer rather than the industrialist.

Many of the New England settlers in America were actually looking for a shorter route to the Far East in hopes of establishing trade monopolies. Once in America a large number of these early settlers turned to local trading as a livelihood, but these colonies often failed, for too much time was devoted to trading and not enough to agriculture and the food supply.

It was, then, natural that the South looked attractive to the colonists, for with plenty of sunshine and water the food problem was lessened.

The first cattle "ranches" were established in the Carolinas and Georgia. The Piedmont section of these states, then, had the first real cowboys. Large shipments of beef and other livestock products were made from these colonies to the West Indies during the latter half of the eighteenth century. The invention of the cotton gin in 1795 caused an increase in cotton

production that forced cotton in and forced beef cattle out of the Piedmont. A strong export demand and the availability of slave labor caused cotton to stick. Large acreages were devoted to the production of rice and indigo.

Charleston at one time was the second most prosperous city in the Union being second only to New York; hence, South Carolina was satisfied with its agricultural life, and industry was left for the northern states to develop.

Conditions were not static, however, and the position of South Carolina as a prosperous state was threatened. Continuous row-cropping caused the land to erode. The slavery question threatened the farmers, for the slaves were considered as property and like all property had value; thus, the freeing of the slaves would mean the losing of property and the lessening of wealth.

Also, the northern states were in favor of tariffs as protection

(Continued on Page 31)

WELDING AIDS

THE FARMER

By ROBERT M. PRINCE

Agricultural Engineering '51

The farmer anxiously watches the weather as he keeps his combine operating every hour possible in hopes of completing the grain harvest before the expected storm arrives. Presto! all of a sudden one small part snaps, rendering the combine useless. The nearest repair shop is too distant to be of any immediate aid to him, and the ordering of a new replacement part is entirely out of the question. With no other equipment available with which to complete the harvest, the farmer watches helplessly as the sky darkens and the storm approaches. This untimely delay causes him to stand a good chance of losing both his grain crop and his religion.

If only this farmer had had a welding outfit, he could have possibly saved himself quite a sum of money, as well as the wear and tear on his nerves. With a quick repair of that one, seemingly insignificant part, he could easily have saved enough money to pay for the welder, in addition to all the other uses to which welding may be applied on the modern mechanized farm.

Such an example as the above may seem to be on the extreme side of the picture, but it is only one of countless instances in which welding may be put to a practical use on our farms of today. At the present time, more and more machine-minded farmers are seeing the need for welding in their program of mechanization, and it is very important to note that welding is paying its way on the farms of these men.

In the not too distant past, a welding unit was considered to be a luxury item when thought of in

terms of farm use. Such an article of extravagance was considered as somewhat of a toy only for the use of the rich farmer who liked to tinker with tools for a hobby. However, the picture has greatly changed in recent years. The manufacturers of welding equipment now offer to the farmer well-built, economical welding units especially adapted for use on the farm. These manufacturers have recognized the fact, just as have many of the more progressive farmers, that welding definitely has an important job to fill on the farm.

Probably the most important of the services which are performed on the farm by welding is the repair of broken machine parts, which, if not promptly repaired, may cause costly losses of time as brought out in the example of the grain farmer. However, there are many other ways in which welding may be used on the farm, each of which may save the farmer much time and money. Worn plow shares may be used again if metal is deposited with a welder on the worn portion and then resharpened. Worn axles may also have their lives lengthened by building up weld metal in the worn sections and then smoothing with a grinding wheel. If the welder is a gas operated type, it may be used to heat tools or any metal pieces for easy bending or forging. These are just a few of the uses for a farm welder, but there are numerous other practical uses which present themselves as necessity arises. As is usually the case, the farmer himself recognizes the needs if he has a welding unit and, with his own ingenuity, is able to devise many new uses for his welder.

An important decision which the farmer has to make when he decides to purchase a welder is to determine which type to buy. The two most commonly used types of welders are the oxacetylene welder and the electric arc welder. There are several factors to be considered in selecting between the two, such as the availability and relative cheapness of electricity versus oxygen and acetylene gases, the original cost of the equipment, and the use to which the welder is to be put. After this selection is made, the farmer must then decide on the size welder which will be most practical for him to purchase. The specifications of the manufacturer will be very helpful in making this decision.

Many farmers balk at the idea of buying any kind of welding equipment because of the mistaken idea that welding is a complicated, dangerous operation. On the contrary, welding is relatively simple with the many easy-to-follow handbooks on the subject which are now available, and the manufacturer furnishes further instructions as to the method of doing practically any normal welding operation. It is now possible for the farmer to take advantage of the benefits to be derived from the ownership of a welding unit with very little instruction. He can save large amounts of time and money, plus gaining the feeling of satisfaction which comes to a man who has done a constructive piece of work. Who knows? He might even become one of those men who stay up late at night constructing some piece of equipment to his own specifications or devising some invention of his own.

PUREBRED

versus

CROSSBRED

Crossbred Calves Compete with Purebred Angus Calves

By JEAN ANDRE ROUX

Animal Husbandry '52

In 1947, a group of purebred Angus cows were selected from our Coast Experiment Station at Summerville, S. C. These cows were selected to produce purebred and crossbred calves for a test. The main purpose of this test was to compare purebred Angus calves and crossbred Brahman-Angus calves grown under normal conditions for the production of "Heavy Calves" for slaughter. The cows were divided into two groups, one group was bred to a purebred Brahman bull. The object was to produce late winter and spring calves that could be creep-fed and run on pasture with their dams. These calves were fed a ration of four parts ground corn, two parts ground oats, and one part cottonseed meal. A mineral mixture was provided in a self feeding shelter. The possibility of all the good dams being in one lot was eliminated by switching the cows to opposite bulls during the second and following years. A Hereford bull was secured in 1947 and the cows were divided into three lots. All the calves were weighed at birth and again when they were weaned at seven months of age. After weaning, the calves were shipped by truck to a packing plant about fifty miles from the station. At the plant, they were slaughtered and processed; also their dressing percentage, grades, and shrinkage due to shipping were noted. A committee of three graded the calves.

The following three years data was based on averages per calf.

The purebred Angus calves weighed 65.2 lbs at birth, 461.0 lbs at final weighing, and dressed out at 56.6 lbs. While the Brahman-Angus crossbred calves weighed 79.4 lbs at birth, 506.8 lbs at final weighing and dressed out at 58.3 lbs. Both the purebred Angus and crossbred Brahman-Angus had carcass grades of Low Good.

By comparing the above data we find that the Angus calves were smaller at birth, at weaning, and had lower gains. The crossbreds had 45.8 lbs more meat for sale per calf (each 25 cents gives \$11.33). The difference in dressing percentage was 1.7 percent in favor of the crossbreds. Shipping loss and feed were not kept for the first year.

The crossbreds consumed a larger amount of feed than the purebreds; however, at market price they paid for the extra feed and gave a profit of \$5.17 more than the purebreds.

A Hereford-Angus cross was now added to the test. One year's data shows that the Hereford-Angus crossbred calves weighed less than the Brahman-Angus at birth but more than the purebred Angus. However, the Hereford-Angus calves gained more than either the purebred Angus or the crossbred Brahman-Angus calves. The final weight of the Angus was 474.8 pounds, the Brahman-Angus weighed 523.9 pounds and the Hereford-Angus weighed 531.1 pounds at the final weighing. A dressing percentage of 58.1 and 58.8 was recorded for the purebred Angus and the Brahman-Angus crossbred calves respectively. While the Hereford-Angus calves dressing percentage topped both the purebred Angus and Brahman-Angus crossbred calves with a 59.3 percentage. A carcass grade of Medium Good for the Hereford-Angus calves also topped the carcass grades of Low Good of the purebred Angus and Brahman-Angus crossbred calves.

For the one year the Hereford-Angus crossbred calves were on test they out-weighed both the Angus and the Brahman-Angus at weaning and had a higher gain. They consumed more feed; however, their extra weight and higher carcass grade gave them enough margin to pay for the feed. The Hereford-Angus calves also had less shipping loss and a higher dressing percentage. Through three years work the Brahman-Angus crossbreds have shown to be consistently heavier, dress higher, and have equal carcass grades to the purebreds; however, the one year data of the Hereford-Angus calves has shown them to be equal to or better than the Brahman-Angus crossbreds. Hybrid vigor is believed to be accountable for the increased gain of the crossbreds, also equal hybrid vigor was found in the offspring of the Hereford bull when they were crossed with comparable Angus cattle. Thus, for commercial use the crossbreds show promise of being more profitable than the purebreds.

ANOTHER CHALLENGE

● How many farmers realize that conservation practices not only save soil but also increase yields and reduce crop production costs? A majority of farm paper editors . . . regional and national . . . answering this question said that nearly 100 percent realize it but, for various reasons, most *do not yet practice it.*

Here is your challenge as farm leaders of the dawning decade: To transform this apathetic acceptance of soil conservation—wherever you find it—into dynamic guidance of prevailing farm practice. It calls for the fire of youth, the energy of persistent purpose, to overcome habits and wasteful ways.

In this service to agriculture and to America, the farm machinery industry is your ally. For example, Case has consistently promoted the principle that conservation is not something to be done for the farmer but rather to be his own way of farming with his own farm power and implements, at his own discretion and responsibility.

to Farming in the 1950's



CASE

With its 15-foot working width, the Case wide-cut disk harrow gives great capacity with tractors of medium size, such as the Case full 2-plow "SC" shown here with adjustable front axle. Outer sections of this harrow swing on inclined pivots. They can be carried above the middle gangs to go through 12-foot gates, or to gain extra penetration when used as 10½-foot harrow. Angling and straightening "on the go"—by hydraulic control or by rope control powered by its own gangs—makes it easy to cross grassed waterways without cutting and without loss of time. J. I. Case Co., Racine, Wis.

FRUIT FOR FARMS

PROPAGATION OF FRUITS FOR THE HOME ORCHARD

By T. L. SENN

*Asst. Professor of Horticulture
Clemson College, Clemson, S. C.*

Fruit plants may be propagated in two general ways: By seeds (sexually) and by vegetative propagation (asexually). As a rule, the use of seeds in the propagation of fruit varieties, though simple and economical, is not satisfactory; the seedlings produced are usually different from the parents, especially in size, shape, and quality of fruit. Fruit varieties that would come reasonably true from seeds could be obtained by selection and breeding over several generations, but that would require a number of years. The fruit-plant propagator, then, must use a vegetative method (asexual). That is, he must root some part of the parent plant, such as stem or root (cuttings, layering, and similar processes), or place a part of one plant on another in such a way that it will grow (grafting and budding). Since a portion of the parent plant is simply growing in a different location, a plant propagated by asexual means will ordinarily be identical with the parent.

Placing a piece of branch—a section a few inches long—in soil or in sand so that it will root and form new branches is not difficult or expensive. This method—propagation by cuttings—is used for figs, pomegranates, grapes, and certain other fruits and ornamentals. Unfortunately some of the principal tree fruits (for example, pears, apples, peaches, and walnuts) will not form roots at all by means of cuttings or similar methods, or so few roots will grow that the practice cannot be followed commercially. These plants, therefore, are usually propagated by first growing seedlings and then budding or grafting the desired variety upon them. Seedlings are usually uniform enough for this purpose, but vegetatively propagated plants are sometimes used to secure disease resistance and uniform vigor. The plants upon which fruit varieties are budded or grafted are called rootstocks.

There are many different types of cuttings, but the one most commonly used in propagated fruits is the simple hardwood cutting. Figs are readily propagated from hardwood cuttings. They are made during the dormant season from well-matured wood of the previous season's growth. The cuttings should be 6 to 9 inches long, and the basal cut should be just below a bud, as it is from this position on the stem that roots arise most readily. If the cuttings are made in the fall or early winter, they will have to be stored in moist sand or moss in a cool place until spring. If made in late winter or early spring, they may be planted directly into the nursery row. Plant 8 to 10 inches apart and leave only one bud above the soil. Press the soil firmly around the base of the cuttings. Figs may also be propagated by layering when there are shoots that can be pulled down and covered at intervals with soil.

Most bunch grapes can be propagated readily from hardwood cuttings. They are made and treated very similar to fig cuttings. It is also easy to graft or bud one variety on another.

Muscadines (including the Scuppernon variety) root very poorly from cuttings and do best when propagated by layers. To make layers, take a cane and cover a portion of it with soil in the summer and it will root by next spring, after which it can be removed and planted. Long canes may be covered at different locations and if branches are present these also may be covered.

The roots of blackberries live for many years, but the canes live only 2 years. These canes sprout each spring from crowns, and suckers come from roots at various distances from the parent plant. Plenty of new plants can be usually obtained by digging up these suckers the following winter. Another method is to dig roots $\frac{1}{4}$ inch or more in diam-

eter in the winter or early spring, cut these roots into pieces 3 to 4 inches long and place horizontally in trenches about 3 inches deep. These will sprout and by fall should become strong plants with good root systems.

The dewberry, boysenberry and youngberry are propagated by tip layering. In September the tip of the cane is covered with soil, and it will root in a short time. A bud or crown forms which will produce a new plant. These rooted tips are cut off in the spring and planted.

Strawberries are propagated from runners. The runners take root at the nodes forming a new plant.

A grafted tree is made by the union of two parts—the scion, which is cut from a twig of the variety desired from which the top is to be developed, and the rootstock, which is usually of the same species or a closely related one, from which the root system is to be developed. It is essential that the cambium layer of the scion and stock be in contact. The cambium layer is the thin layer of cells between the wood and the bark from which new tissues are developed.

In the past, rootstocks for apples have been grown to a great extent from "French Crab" seed, obtained mostly from France. In recent years, however, seed of domestic commercial varieties have been utilized for rootstocks. The most commonly used varieties are Rome Beauty, Delicious, Ben Davis, and Winesap.

These rootstocks may be home grown or purchased from almost all large nurseries.

Scion wood of one season's growth is preferable to older wood because unions with it are more easily made and the buds are more likely to grow. Scion wood may be taken from bearing trees of the desired variety or purchased from nurseries. Scion wood is usually cut in late fall, or during winter. It should be labeled and stored in a cool

place and kept moist. The tender tips should be cut off before use.

Grafting of this type is also referred to as "tongue" or root grafting, and is used in grafting seedling root stocks for growing young fruit trees, usually apple or pear varieties. In top working small trees where it is undesirable to graft in the trunk and the limbs are an inch or less in diameter then whip grafting is easily used.

Best results are obtained when the scion and stock are of about equal size. In making a whip graft, a long tapering cut about $1\frac{1}{2}$ inches long is made on both the scion and the stock. One cut with a sharp knife will do it. The knife is then placed on the slope or slant about half way from the end and a tongue is cut here on both scion and stock. A straight draw cut should be made avoiding a split. When the scion and stock are brought together, the tongues each slip into the slits made for them and are held together. If the scion and stock are of equal size (the cambium layers will be in contact. If they are of unequal size then the scion should be offset so that the bark matches on one side. This type of graft is usually wrapped or tied to hold the scion and stock together until the cut is healed. Waxed string, raffia, small rubber strips, and special tapes are used for this purpose. Narrow rubber strips about five inches long are ideal, for they exert enough pres-

sure to keep the parts together and will allow for expansion. After wrapping, the graft may be covered with a thin layer of wax. The graft should be examined in about six weeks and if the cut has healed then remove the wrapping.

Immediately after the grafts are made they should be tied in bundles and packed in moss, sand or sawdust to keep them moist. These grafts should be stored in temperatures of 40° to 45° F. The grafts are planted in nursery rows in early spring while still dormant. They are usually spaced 6-8 inches apart. Care is taken that the union and most of the length of the scion is underground. The soil should be pressed firmly around the roots without disturbing the union.

The peach is propagated almost entirely on peach seedlings grown from seed of commercial varieties.

Budding is employed by nurserymen in propagating a desired variety of peach on a seedling stock. Budding differs from grafting in the use of a single bud instead of a scion and also in the season of the year when the operation is performed. Budding is done in the summer while growth is active.

The pits are planted in the fall or early spring in rows where the young trees are to be budded because they obtain sufficient size to be budded during the first year's growth. At budding time (last of May or June) the stems are about

pencil size, and the lower leaves are removed so that the buds can be placed on smooth, clean stems.

The buds are taken from wood of the current season, after growth has progressed so that those on the middle portion of the twigs or "bud sticks" have fully developed. Generally the four or five buds along the middle portion of the twig are best to use.

At the time the bud sticks are cut, the leaves are trimmed off, leaving about a quarter of an inch of leaf stem to protect the bud and to aid in handling it. It is advisable to cut the buds at the time they are used, but if necessary they can be kept fresh for two or three days wrapped in wet burlap or paper and stored in a cool place.

The "T" or shield budding with modifications is the most widely used method of cutting. The bud is cut from the twig in the form of a shield. The bud is inserted into a cut under the bark of the stock made by two cuts—one along the stem, the other across it. The operation is completed by tying the bud in place. Several different materials are used, for example, string, cloth, raffia, and rubber strips. The wrap is allowed to remain until the tissues have united, but should be cut if girdling takes place, about 10 days to month. Ordinarily the buds will remain dormant the season they are inserted.



Are Chemical Fertilizers Really Harmful?

By ALAN B. SIBLEY

Agronomy '51

In recent years a new cult of agriculturists has appeared. These agriculturists go by the title of Organiculturists, or "organic farmers" or by some other name which implies that the farm without the use of water-soluble commercial fertilizers and fertilize their crops solely with such materials as green manures, animal manures, tankage, fishmeal, composts and minerals in the ground rock form. These organic farmers have become rather numerous, and are publishing their own literature. Much of this literature is sound, for all agriculturists realize that organic matter is a valuable constituent of all soils; however, the Organiculturists are not satisfied in telling other agriculturists the value of organic matter, for they are publishing pamphlets and magazines which unfairly picture chemical fertilizers as being detrimental to the soil, the crops from which being very detrimental to human health. The nutritive value of organic matter is also sometimes exaggerated, and there is no basis for many of the facts presented against commercial fertilizers which are not in the form of organic matter. Practically all soil chemists need no explanation concerning these misleading facts and are able to disprove them in the light of modern research. To the layman, however, this literature can be very deceptive and can induce him to accept the false assumption made regarding the harmful effects of chemical fertilizers. In order to clear up this situation, it is necessary to examine the claims made against chemical fertilizers in an effort to arrive at an explanation that exonerates chemical fertilizers to the layman's satisfaction.

One of the main claims that the organic farmers publicize is the belief that the use of chemical fertilizers lowers the fertility and brings about the erosion of our soils. To substantiate this belief, they give results from various experiments that they have made or observed. For example, they will use two crop plots, one fertilized solely with organic matter, the other fertilized solely with chemical fertilizers. The results of the experiment show that the plot fertilized with the organic matters produced the greater yield, the crops from which being higher in quality, and the Organiculturists conclude that these results are sufficient evidence to say that chemical fertilizers are making our soils poorer and producing crops which do not provide us with the correct amounts of nutrients to maintain our health. The experiment proves nothing of the kind. It only proves that organic matter was needed by the soil in the two plots more than was the addition of additional plant nutrients provided by the chemical fer-

tilizer. The chemical fertilizers alone could not be expected to improve the physical condition of the soil to the extent that the organic matter does. The dealers of commercial fertilizers do not pretend to offer their chemicals as a substitute for organic matter as the experiment was set up to show. Chemical fertilizers will not take the place of organic matter in the soil, for a certain amount of organic matter is necessary to condition the soil from a physical sense in order that the plants may function properly in their environment and be able to utilize the nutrients offered in chemical fertilizers. In order to be accurate, the experiment should have been composed of three plots, the third being fertilized with both the chemical and the organic fertilizers. This third plot would produce the greatest quantity and quality yield, for the organic matter would improve the physical condition of the soil and, together with the chemical fertilizers, supply nutrients. In some cases, however, the application of chemical fertilizers to inherently rich soils, which contain an abundance of organic matter, may not produce a profitable increase in yields, for enough nutrients are already in the soil, but the application of chemicals to inherently poor soils, as some of those found here in the South where of organic matter and other recommended farming practices will be very profitable.

Many farmers plant row crops on easily erodable land and apply chemical fertilizers to these crops. When the land erodes, the blame cannot be placed on the chemical fertilizers, but should be placed on the farmer for not providing adequate protection for his land. It is not the presence of chemical fertilizers but rather the absence of organic matter and other recommended farming practices which causes the land to erode.

The Organiculturists say that chemical fertilizers bring about an over-development of cellulose in plants which causes growth to be too woody and decreases the protein content. This is not always true. The amounts of cellulose, carbohydrates, and proteins in plants depend largely upon the amount of nitrogen available to the plant. A high content of nitrogen makes for less cellulose, less carbohydrates and more protein; consequently, the amount of protein in plants can be regulated by applying a chemical fertilizer containing nitrogen. Plants absorb nitrogen in the nitrate or ammoniacal form. The nitrogen present in organic matter does not become available to the plant until the organic matter has been broken down, at which time the nitrogen is available in the nitrate or

An Examination of the Claims Made Against Commercial Fertilizers

ammoniacal form; hence, it is difficult to conceive that the Organiculturists object to the use of the nitrate and ammoniacal nitrogen found in commercial fertilizers, when the plant is going to get the nitrogen in the same form from organic matter.

These strictly "organic farmers" are principally against the use of water-soluble chemical fertilizers, and they advocate the use of water-insoluble chemical compounds, such as ground rock phosphate and other mineral rock forms which contains potassium and the trace elements. They apparently realize that organic matter alone cannot always meet the full requirements for crop growth. These ground rock fertilizers, become slowly available to the plant, and when they are available, many are in the same forms as those nutrients supplied in water-soluble chemical fertilizers. The chemist can extract these elements from their crude forms more quickly than if similar reactions are carried on in the soil. The Organiculturists still maintain that chemical fertilizers are harmful and tie up certain trace minerals, which then become unavailable to the plant. This could be true if improper fertilization practices are followed, but if proper fertilization practices are adhered to, the nutrients in the soil will be in balance, and little tying up will occur.

Besides tying up other nutrients, the organiculturists claim that the soluble chemicals then "force" their way into plants. "Forcing" apparently means that the plants do not want these nutrients and already have sufficient amounts of them and that these unwanted nutrients then substitute themselves for other nutrients really needed by the plant. If certain nutrients are not present in the soil or remain in an unavailable form, sometimes other nutrients will substitute themselves for the lacking nutrients, but if proper fertilization practices are followed, the nutrients will be in balance and will be available.

Crops can be grown in the complete absence of organic matter. A new phase of agriculture, hydroponics, works on the principle of supplying nutrients to the plants by chemical fertilizers alone. An artificial culture medium is used to take the place of soil, and the medium is regulated to supply to the plants grown adequate nutrients. Hydroponics produces crops of unsurpassed yields and quality. Natives in the South Pacific and other areas of the world, where these soils are too inherently poor to produce crops, have lived successfully from produce grown by hydroponic methods. Our soils need organic matter and cannot produce good crops following the appli-

cations of chemical fertilizers alone, but hydroponics prove that chemical fertilizers do not lower the nutritive value of crops, as is claimed by the Organiculturists.

The Organiculturists point to China as an example of strictly organic farming to show others that those who eat foods grown organically are less susceptible to certain diseases. Of all the places in the world to point to, the Organiculturists certainly picked the wrong country as an example of a type of farming that eliminates diseases. China is a country of many famines and diseases and needs its agriculture improved. The Chinese may not be susceptible to certain diseases, for where in the world can one find a better example of the "survival of the fittests"? The Organiculturists also say that the sulfur in chemical fertilizers cause cancer. Until more is learned about cancer, placing the blame on chemical fertilizers is only an assumption. The sulfur obtained by the plant from organic matter decomposition is largely in the same forms as that supplied by chemical fertilizers.

In order to think clearly, one must read clearly. Oftentimes the literature written against the use of commercial fertilizers is misleading. Many articles, whose titles make claims against chemicals, give examples of the improvements in health experienced by those who eat foods grown without the use of chemical fertilizers. The use of chemical fertilizers beforehand is implied, but no actual statement is made as to what was eaten before organically produced foods were consumed. Those who ate the organically grown foods may have been eating only a handful of rice a day, but the reader can easily assume that foods grown with chemicals were eaten, as implied in the literature. Any improvement in nutrition, whether organically grown foods or foods grown with the aid of chemicals are used, will cause bodily improvement to those who eat the more nutritive foods. Until the necessary facts are known, it is unwise to make assumptions.

In summary, chemical fertilizers are not harmful to use. They can be put to a good advantage when used along with organic matter. Poor soils especially need the boost that the chemical nutrients offer, for organic matter is not too stable in some soils, and its advantages will be limited. It is not always practical or profitable to follow a large scale organic farming program; hence, for best crop growth, all of the organic matter possible—when it is practical—should be turned into the soil, and chemical fertilizers then used to promote the extra growth.



Shown above are the winners of scholarships in the annual Hands Day Awards Program. They are (l. to r.): Bill Stewart, Robert Duke, Bob Johnson, Jim Cushman. Back row: Bob Prince, Winston Sibley, John Parham.

A. M. Musser Co-Edits Book

A. M. Musser, head of Clemson's Horticulture Department, is one of the three authors of a new horticulture textbook. J. B. Edmond, a former faculty member here, and F. S. Andrews, associate professor of horticulture at Virginia Polytechnic Institute are the other two authors of *Fundamentals of Horticulture*.

Professor Musser is well-known for his work in the horticultural field, including the many varied experiments he has made in fertilization and pruning of fruit and pecan trees.

Professor Receives Degree

James F. Miles, Associate agricultural economist at Clemson Agricultural College has recently received his Doctor's Degree from Cornell.

Dr. Miles, although he has been at Clemson for only three years, is well-known for his achievement on research in marketing farm products.

A graduate of Spartanburg Junior College and the University of South Carolina, Dr. Miles also studied at Furman University, the University of North Carolina, American University, the United States Department of Agriculture's Graduate School, and Columbia University.

Alpha Zeta Initiates New Members

The nine new members of the South Carolina Chapter of Alpha Zeta, national honorary agricultural fraternity, are fully acquainted with the organization now that a full week of informal "wear and tear" initiation is over.

The nine new members, their major, and their home town are as follows: P. Alley, entomology senior of Macon, Georgia; G. B. Brockenbrough, agricultural engineering sophomore of Kinards; R. W. Duke, Jr., animal husbandry sophomore of Kingstree; R. E. Farmer, pre-forestry sophomore of Sevierville, Tennessee; T. H. Jeffords, animal husbandry junior of Florence; W. J. Jenkins, horticulture senior of Osborn; J. A. McCommas, animal husbandry senior of Elizabethtown, North Carolina; J. H. Robinson, agricultural engineering sophomore of Oswego; and J. H. Rodgers, vocational agricultural education sophomore of Lake City. (List of members taken from TIGER.)

Words for the Wise

Mr. J. M. Eleazer, Clemson Extension information specialist had words for the wise when recently asked by an AGRARIAN staff member what, in his worthy opinion, would make a good story for readers of the agricultural student publication.

Mr. Eleazer said that greater emphasis should be put on the management of pastures in South Carolina. According to the well-known Carolina columnist, quote: "The farmers in South Carolina know how to grow pastures, but they don't know how to manage them."

He mentioned the fact that many farmers overgraze their pastures and also fertilize their pasture plants improperly.

Students, 'Tension!

Just in passing, *The Agrarian* would like to remind agricultural students at Clemson College that the bulletin boards in Long Hall and Tillman Hall may prove worthy of one's efforts in reading them. Various colleges and universities throughout the United States are "advertising" for graduates of different majors in agriculture who are interested in opportunities in graduate work. Various assistantships and fellowships are offered by many schools also.



Professor Teaches Economically

Professor Rallings, teacher of freshman agronomy at Clemson Agricultural College, is teaching on the economic scale presently. Mr. Rallings is assigning each of his freshman students an agricultural topic to speak on during class. "By teaching this way," this popular professor says, "the teacher does less 'yapping', and gives the student a chance." That's teaching real economically!

Honor Awards for Scholarship Recognition Day 1951

The *Danforth Foundation* of St. Louis awards fellowships each year to two agricultural students. One of these is given to an outstanding member of the Junior Class majoring in either Dairying, Animal Husbandry or Poultry Husbandry. The award amounts to \$180 and provides expenses incident to the attendance of the recipient at a two-weeks summer short course for training in salesmanship at the laboratories of the Ralston Purina Company in St. Louis and also for a two-weeks stay at the American Youth Foundation Leadership Training Camp at Shelby, Michigan. The fellowship for the coming summer was awarded to *William Franklin Stewart, Jr.* of Fountain Inn, Junor in Dairy Husbandry.

The second of these Danforth fellowships amounting to \$50 is awarded to an outstanding freshman expecting to major in the animal science field. It provides for a two-weeks stay at the Leadership Camp at Shelby, Michigan—the same camp to which the recipient of the Junior award goes. The student receiving this award was *John S. Wilson Parham*, of Sumter, freshman in Animal Husbandry.

The *Sears Roebuck Foundation* provides funds each year for a number of scholarships awarded to freshman students in agriculture on the basis of a competitive examination. A Sophomore scholarship of \$200 is also provided by the Sears Roebuck Foundation for that student among the winners of Sears Roebuck Freshmen scholarships who makes the highest scholastic record during his first year. The winner of this scholarship for the present college year, *Robert William Duke, Jr.*, Animal Hus-

bandry Sophomore of Kingstree, was determined last fall.

Each year the honorary agricultural fraternity of *Alpha Zeta* gives a prize to the Sophomore student in agriculture having the best scholastic record for the first three semesters of his college course. The prize this year—a five-year subscription to the *Farm Quarterly*, outstanding agricultural publication—went to *Robert William Duke, Jr.*, of Kingstree.

The *Borden Company Foundation* of New York City makes available each year a scholarship of \$300 to the agricultural student who in addition to his other courses must have taken at least two courses in Dairying, must have completed the Junior year, and must have the highest grade point ratio of students in that category. The scholarship for the present college year was awarded last fall to *Winston Hall Sibley*, of Greenville, senior in Animal Husbandry.

Mrs. C. L. McCaslan, of St. Matthews, has established a fund of \$1,000 to be known as "*The Clark Lindsay McCaslan Memorial Fund*" in memory of her late husband. The income from this fund will be awarded annually to the most deserving student in Agricultural Engineering. This year the income amounting to \$25 was presented to *Robert Melvin Prince, Jr.*, of Lynchburg, senior student in Agricultural Engineering.

The *Anderson Fellowship* of \$350 is awarded by the faculty of the School of Agriculture each year to that member of the graduating class who has the best scholastic record among those desiring to pursue graduate work. The graduate studies may be carried on at Clemson or at another institution, as the recipient desires. The fellowship for the college year 1951-1952 went to *Earl Wilburn Moore* of Westminster, senior in Entomology.

This year we have a new award to be made in the School of Agriculture. The Ladies Auxiliary of the South Carolina Dairy Association has awarded \$50 to the graduating Dairy major with the highest scholastic record. The winner of this award was *Maurice David Rice*, of Augusta, Georgia.

Invitation to . . .

FORESTRY

By C. B. DALTON

Pre-Forestry '52

Are you among the thousands of college students in the United States who have no idea as to the type of work which they would like for a life-time occupation? If you are among this undecided group, then come along and I will try to give you an idea for your consideration. If you are ambitious and want to get ahead fast, forestry is a good field for you as it is comparatively young and is still in the pioneering stages. There is great opportunity in the fields connected with growth, management, and utilization of forests. Someone—to illustrate the enormous use of wood in a man's life—once said that a man uses more wood than any other material; it follows him from the cradle to the coffin.

When the word Forestry is mentioned, everyone automatically catches a mental picture of the solitary fire tower, or that of some mountaineer felling trees by means of the hand wielded axe. These positions are occupied by men who have not had the chance for a college education, or by some men fresh out of college who are working themselves up by experience. By no means is Forestry confined to these few fields.

Forestry is divided into two major divisions—Forest Management and Wood Utilization. These fields are then further broken down. Forest Management pertains to the management of wild lands, especially those being used for grazing, watershed management or recreation. A man doing this type of work not only needs a degree in Forest Management but also the fine qualities of a good leader as he is closely connected with the populace of the managed area and adjoining lands. For this degree he must have a very intensive study of Silviculture, Timber Estimating, Management, Fire Prevention and Control, Forest Pathology, Insect Control, Forest Soils, Economics and other aspects of land use. A degree in this field usually leads to outdoor work.

Wood Utilization is subdivided into three major fields. The first of these fields is Wood Technology which is concerned with the wood using and wood manufacturing industries. It requires that one thoroughly understand the processing of wood from cutting, logging, milling and seasoning to gluing, preserving, finishing, fabricating and machining. Pulp Technology requires that one understand the chemistry of wood and of paper manufacturing. Last of these three, but by far not least in importance is Lumber Production which requires that one thoroughly understand the distribution, selling, and use of lumber of various kinds.

These major divisions have branched out into so many fields that it would require pages and pages just to

list them. Maybe you are interested in soil and water conservation, furniture manufacturing or many other fields. Forestry, or one of its branches, is connected with many allied fields.

Most men are looking for fields in which there is security. There is no other field quite as secure as Forestry. Wood is essential for the survival of the human race. Because of its great need it is necessary that new forests be continually coming on in the place of that timber which is now being cut out. Approximately 48% of the United States is forested and about 15% of its present land area is in need of forests. Approximately 59% of the Carolinas is forested. There are about 500,000 square acres to be managed by one man in the U. S. while there are only 10,000 acres per man in Europe. Though this is true, the people of the U. S. use about 20 times as much wood as do the Europeans. This should show that there is a very great need of men in this field.

There are jobs for men trained in this field elsewhere besides in the forest. Trained men in this field are needed by the veneer and plywood producers, plastic industries and in numerous other occupations. Men having a trend toward experimentation might be interested in the experiment stations now being operated by the United States Forest Service, State agencies and numerous private concerns such as paper and furniture companies.

A field closely allied to Forest is Wildlife Conservation. This field does exactly as the title states and in doing so has preserved animals and plants which were rapidly growing extinct. Not only has it stopped the extinction of these, but in cooperation with the Forest Service has reduced the amount of yearly destruction of the forests by fire. By controlling the number of hunters in the forests and by not allowing any campfire in the controlled area, the amount of fire loss due to man-made fires has been greatly reduced.

Laid before you here are only a few of the many jobs which follow a degree in Forestry or Wildlife Conservation (as these are usually offered together in most colleges). These jobs are only a meagre touch upon the broad and varied field which is summed up by the small word "Forestry". If you are among the many undecided college students or if this article has interested you, why not look into the field in which you are most interested for there is surely some connection between it and some branch of Forestry. Here lies a young and growing field which needs young and ambitious men to help keep it growing.

SERVING THE FARMERS
of
NORTH and SOUTH CAROLINA
for
FORTY YEARS

PLANTERS
Fertilizer & Phosphate
Company

Charleston, S. C.

3-7267

Charlotte, N. C.

2-1086

S. C.'s PATTERN of PROGRESS

By WILLIAM D. POE

From Clemson to Charleston, from the mountains to the sea. That was the trip we made recently. We saw a lot of South Carolina, heard a lot of its people talk. And we liked what we saw and heard.

In a way the trip constituted national recognition for the state. For we were accompanying the agricultural committee of the American Petroleum Institute. Eighteen of its members came from all over the United States—one from Canada—to observe South Carolina's progress on the tour arranged by Clemson College.

Beginning with a full day at Clemson, we made a two-day swing across the state by chartered bus. To Anderson, Blackville, Orangeburg, Summerville, and Charleston we went. And before us spread the new state Pattern of Progress that is bringing with it a richer way of life.

It is a broad Pattern of Progress—a dynamic pattern. Fourfold in its scope, it embraces:

- 1) *More power,*
- 2) *More and better education,*
- 3) *"Two-Armed Farming"—crops balanced with industry,*
- 4) *New industries—agriculture balanced with industry.*

This article has been reprinted by permission of *The Progressive Farmer*. Its author, Mr. William Poe, has been associated with the magazine for ten years. He attended North Carolina State College and the University of North Carolina. He served in the Army as a corporal during the last war. Mr. Poe is now married and has two children. *The Agrarian* feels that he should be commended for such a fine article and for the interest that this article will arouse in South Carolina and its agriculture.

Let's see how each of these four elements fits into the picture of progress we found everywhere.

I. The Place of Power

"There simply isn't enough power in a mule to support a family. Yet for many years our farmers struggled to prove there is."

So wise Extension Director D. W. Watkins told our group. From 1949 to 1950 the number of tractors in South Carolina increased 467 per cent—the *greatest increase made by any one of all the 48 states in the nation!* As the number of tractors has gone up, the number of horses and mules has gone down. On our entire swing clear across the state we saw scores of tractors at work. How many teams of mules? Only two: South Carolina is casting off outmoded methods, is gearing itself with efficient production tools. And an important by-product of this transition is the release for productive use of thousands of acres formerly required to feed the work stock.

Another vital power development is in *rural electrification*. In 1939 only 14 per cent of the state's farms were electrified. Today only 13 per cent are without electric service—87 per cent have it. Electricity is generating power for both better farming and better living.

A third form of power we saw is *irrigation*—the power to supply water when needed. On the truck farm of Newman Buck, Charleston County, we saw a dramatic demonstration of the possibilities of supplementary irrigation. His drainage ditches feed runoff water from heavy rains into three farm ponds. In times of drouth water is then pumped from these three reservoirs onto thirsty crops. We saw his portable system irrigate a large field of cabbage. In a few minutes time he could move it to another field to water another crop.

At Clemson we saw tangible evidence of the state's emphasis on power development. There a modern \$250,000 agricultural engineering building has been completed to project all modern forms

(Continued on Page 22)

Security

Brand

THE MARK OF

QUALITY -:- DEPENDABILITY -:- SERVICE

FOR OVER 25 YEARS

Insecticides - Fungicides - Wood Preservatives

Weed Killers - Soil Fungants - Grain Fumigants

● FORMULATED TO MEET
EVERY NEED ●

Dusts - Wettable Powders - Solutions - Liquids

Emulsifiable Concentrates - Emulsions

See Your Security Brand Dealer for Pest Control Problems.

The Answer Lies in the 150 Security Brand Products Used for

PEACHES

COTTON

CATTLE

APPLES

TOBACCO

HOGS

SMALL FRUITS

TRUCK CROPS

POULTRY

ORNAMENTALS

GARDEN

HOUSEHOLD

WOOLFOLK CHEMICAL WORKS, LTD.

MANUFACTURERS

FORT VALLEY, GA.

of power to the farmer. Keen, young Agricultural Engineer George Nutt and his staff are proud of their new building, eager to press it into full service of the state's agriculture.

So much for the first part of the South Carolina Pattern for Progress: South Carolina is developing the power to do a good, efficient production job.

II. The Role of Education

But power without knowledge of how to use it is of little value. The farmer needs sound education and guidance to keep abreast of all of today's rapid scientific developments. Clemson College through its extension service, experiment station, and resident teaching is constantly advancing vital information. Listen—

4-H clubs have a total enrollment of 51,000 boys and girls—more than 1,100 to the county.

here. We have a County Agricultural Council with a representative of each agency as a member. The chairmanship is rotated each year. We work together harmoniously. This cooperative effort has played a big part in our county's progress."

Nor is Negro farm education being neglected. One of the finest dairy herds we saw was at South Carolina A. & M. College, the Negro Land Grant College at Orangeburg. This college has 1,288 students with 150 enrolled in agriculture. Graduates go out over the state to lead their race in farm and industrial progress. Young Negro farm boys have their own organization, similar to FFA, with 1,970 members.

Such is another part of the Pattern of Progress: Farmers and farm boys are getting sound training for modern farming.

**A dynamic combination of agricultural,
industrial, and educational advances promises
balanced prosperity for the Palmetto State.**

FFA members total 7,299—more than 150 to the county.

Veterans-on-farm training classes have a total of 12,892 enrolled—more than 275 to the county.

What does all this mean? Simply that South Carolina is now developing a whole new generation of farmers who are attuned to science and progress.

The Soil Conservation Service's outstanding job in planning land use and helping farmers conserve soil, water, and timber resources is shown by this fact: *Farm plans have been made for almost half the state's individual farms.* Free services are available to farmers who request them. "Soil conservation men down here have turned literally worthless land into topnotch pastures and truck farms," a Charleston County farmer told us. The handiwork of these scientific soil savers is written indelibly on the land of the entire state.

County agents, vocational agriculture teachers, soil conservation specialists, experiment station specialists—all are at work in the vast task of education. And in most cases there seems to be fine cooperation among them. Said Anderson County Agent J. H. Hopkus as he showed us through the county's \$300,000 agricultural building (which incidentally was built without federal aid): "All agricultural agencies in the county have their offices

III. Balancing Crops With Livestock

"Twenty-five years ago," said Clemson Agronomist H. A. Woodle, "South Carolina was growing 2 million acres of cotton but had almost no pastures worthy of the name. Now the state is growing only about 1 million acres of cotton, but it is pushing hard toward 1 million acres of improved pastures. We are making a successful effort to balance crops with livestock."

Although the coldest winter since 1879 had just ended, we almost never got out of sight of green pastures on our swing from Clemson to Charleston. A few years ago most of these fields now nourishing livestock would have been bare, bleak, and idle—idle except for the erosion that would have been busy after every shower—with farm hands and mules awaiting the cotton planting season.

"Agronomists from other sections say no other area can match the South in livestock production," continued Mr. Woodle. "We have the advantages of 1) a longer growing season, and 2) cheaper land. Also 3) winters are so mild no expensive buildings are needed. Folks are coming into South Carolina by the hundreds from many states. They are buying land we used to think worn out for \$40 an acre and converting it into good pasture."

(Continued on Page 32)

Since 1845

***This trademark is your guarantee
of highest quality in meats!***

Kingan's
R E L I A B L E

Beef - Veal - Pork - Ham

Self-Service Luncheon Meats

Canned Meat Products

Lard and Shortening

Tender Smoked Hams

Tasti-Cooked Hams

Fresh and Smoked Sausage

Sliced or Slab Bacon

U. S. GOVERNMENT INSPECTED

When you buy Kingan's . . . You buy the best!

**BUYERS and PROCESSORS
of LIVESTOCK**

Kingan & Co.

ORANGEBURG, SOUTH CAROLINA

Main Plant and General Offices: Indianapolis, Indiana

Carpets of Green

By R. E. FARMER

Pre-Forestry '51

By the end of each week are you tired of military life and the senseless little duties which must be performed each day? Are you tired of being "busted" by some rank happy individual for such things as "dusty radio tube" or "exhaling in ranks"? Well, I can't say that I have a remedy for the hardships laid on us by the military boys, but I do have a plan which may help some of you. Take a walk by yourself on Sunday morning, not in the afternoon, but early in the morning. Here are some of the things you will see and hear.

The early morning finds me standing over the swirling waters of Twelve Mile creek. Behind me are the houses and towers of Clemson; before me the River Birch stand out like white lines on the dark background of the swampy woods. Crossing the crude wooden bridge, I follow the frozen ruts which lead into an old corn field now grown up with grasses and sage brush. Upon my entering the field, a crow rises on silent wings and disappears across the creek. From this new position he caws his warning to the rest of the black flock which immediately takes up the cry of alarm. "Caw caw beware caw man is here." And thus the surrounding territory learns of my arrival.

Proceeding across the field, I am pleasantly surprised by a fat young cottontail who bounds out of a clump of grass and goes zig-zagging his way through the dead corn stalks. At the edge of the open field he stops, raises himself on his hind legs, sniffs the air, and then plunges into the woods. Going over to the spot

of grass which was his hiding place, I find a snug little nest hollowed out in the dead weeds. It is still warm. As I stand there I cannot help but think of the many rabbits that have jumped from just such a warm nest straight to their death. How many of these small animals have leaped from hiding only to be ripped down by the lead pellets from a shotgun? A small, vibrant ball of life reduced to a mass of warm fur and blood in matter of seconds. And yet this hold-over from our caveman days is still called sport.

After leaving the field, the old road leads down a hedge row into the wooded hills. The air is filled with the singing of birds as I enter the woods, and I wonder at the variety of winter residents which are all around me. Some robins, looking very fat and comfortable with their feathers fluffed are hopping about in search of food. A small Downy Woodpecker spins around and round the trunk of an old pine in his quest for bark beetles. How empty a forest would sound without the staccato tapping of some woodpecker or sapsucker. As I slowly climb through the pines to the top of the ridge I notice how these trees keep the woods from looking so bare during the winter. Their green needles blending with the gray and brown of the hardwoods, creates a somber effect which, in its own way, is just as beautiful as the summer foliage.

On this particular ridge where I am walking there is a small but picturesque family cemetery which dates back beyond 1775. In the summer it is so obscured

by the growth that one seldom notices it, and even in the winter its gray rock wells blend well with the landscape. Since its gate is sealed with stones, someone has removed part of one wall in order to get in. Through this hole I go. Immediately my sight falls on the one tomb which seems to be intact. It is covered by a large slab of granite on which the inscription can still be seen. It begins like this: "Sacred to the memory of The Honorable John Ewing Calhoun. He was born the year 1751 and died on the 20th of October, 1802", and ends like this, "He filled at the time of his death the high station of Senator of The United States. He died tranquilly in the bosom of his family, loved, honored, and lamented, looking forward with humble confidence in God to a happy immortality." All around the small graveyard can be seen the resting places of his slaves, and on the opposite ridge are the remains of his home. The terraced fields are now covered by a mixed forest of pine and hardwoods, and soon all traces of the plantation will be gone. Only the rock-walled cemetery will remain to remind us of a forgotten past.

With the sun high overhead I leisurely make my way back over the hills toward the old brick clock tower. Walking down the street with my mud covered boots as people begin to leave church. I realize that a walk outdoors is much more pleasant and inspiring than sitting in a stuffy building all morning. My mind cleared and refreshed, is ready for another week's work.

By R. E. FARMER

Pre-Forestry '53



Along Nature's Trail

If you travel for a few miles on the black top road to Lawrence Chapel, which leads northward out of Calhoun, you will soon come to a sign announcing the Clemson Wildlife Management Area. This tract which is part of the Clemson Land Use Area is being utilized for wildlife production under the management of Mr. R. M. Berry, a graduate of the University of Michigan and New York State College, who came to Clemson last summer. The work at the present time consists of planting plots of bicolor lespedeza which produces excellent food for birds. Right now Mr. Berry says that there are a few covies of quail already in the area. Later he plans to stock the land with deer and turkey.

Lake Esaquena, a small artificial lake, is located in this area close to the North fire tower. Originally built for recreation, the lake has been so muddy that people were not attracted to it. The country around the water is pretty, with thickets of mountain laurel and a pine and hardwood forest. There is a trail constructed which follows the entire boundary of the lake, and an old picnic area is located on the west shore. Esaquena is open to fishing, and a few people take advantage of this, but in the long run what could have been a beautiful spot is ruined by the muddiness of the water.

This land is being developed not only from the wildlife standpoint but

also for timber production. Within the next few years a complete forest inventory will have been taken, and the area will go under strict forest management. Soon this land should serve as an example of what can be accomplished by proper wild-life management.

As I was wandering around in the bottoms the other day, I noticed that the high water stakes have been placed for the new Hartwell Dam. It might be interesting to know just how the lake will affect Clemson land if it remains full. When I looked at a map of the lake area, I found that Clemson will be more or less a peninsula. One the south side of the campus the water will fill the hollow below the dairy barn and will cover the present road leading south. To our north the Seneca River bridge will have to be removed and the road re-routed in order to avoid the lake. All the Seneca River bottoms will be covered completely and there will be about twenty-five feet of water in the football stadium. This presents a problem which must be solved within the next few years. Will another stadium be built or can the old one be protected by a dike? If a dike is built we should remember that the little stream coming down from the power house would have to be pumped out when the lake is full. Of course the dam won't be completed for about five or six years unless it is needed for some

emergency, but still it gives one something to think about.

Recently I had the chance to see and study one of the most interesting wild plants in this part of the country. I had heard often of this *Shortia* or *Oconee Bell*, but had never seen it until Professor Rosenkrans took our Systematic Botany class up to Jocassee, a community in the foothills of Pickens County. The *Oconee Bell* is found in only two small sections of the world. Some is reported to be in Japan, and the rest grows within a small area in Pickens County. How it got there no one knows. Jocassee is a small backwoods settlement near Salem. A few years ago it was a thriving summer resort, but now the buildings and lodges are falling apart from lack of attention. A clear mountain stream flows through the small valley, and there is an abundance of white pine, hemlock, laurel, and rododendron. The *Oconee Bell* is found in the surrounding hills and invariably grows in shady moist places. Sometimes it spreads throughout the whole side of a hill making a carpet of green shiny leaves. *Shortia* is a medium sized plant, blooming early in April with a white bell shaped flower, which is quaintly beautiful against the green background. How did it get there? Why hasn't it spread? These are mysteries of nature that haven't been solved yet.

Antibiotics Offer Poultry Pep-Up

Animal proteins have been known since 1900 to be necessary for good chick growth in chicken rations as well as in the rations of some other domestic animals. Vitamin B₁₂ was isolated recently and it was found to be the most important factor present in animal proteins that is not present in plant proteins. Animal protein factor concentrate is being produced in such large amounts that it is available to commercial feed manufacturers to mix with their feeds. A majority of the commercial feed manufacturers include animal protein factor concentrate in their poultry rations at the present time.

HOWARD N. RAWL

Poultry '54

The isolation of Vitamin B₁₂ was announced by two laboratories at about the same time during April of 1948: Merck Laboratories in the United States and Glaxa Laboratories in England. Each of these laboratories found that it contains phosphorous and cobalt. Merck Laboratories isolated Vitamin B₁₂ from liver after twenty-two years of research for this vitamin. Most of the animal protein factor concentrates are produced from a bacterial fermentation process, but some of it is produced from antibiotic residues.

Animal protein factor concentrate is a group of vitamins which includes Vitamin B₁₂ as well as other vitamins necessary for the most efficient growth. Vitamin B₁₂ is found in poultry meat, eggs, cow and poultry manure, and animal proteins. It is present in built-up litter to the extent that it promotes chick growth. It has been known to be contained in cow and poultry manure for some time. The concentration of Vitamin B₁₂ in the animal protein factor concentrate made by the original producer is twelve

and one-half milligrams of vitamin per pound of concentrate. The concentrate has been used in most of the experiments conducted by researches. Merck Laboratories is the only company which advertises the amount of Vitamin B₁₂ in its product. Lederle Laboratories have recently increased the vitamin content of their product from .23 to 1.8 milligrams of Vitamin B₁₂ per pound of product. Pfizer Laboratories' concentrates contain three and six milligrams of Vitamin B₁₂ per pound of concentrate. The Vitamin B₁₂ content of United States Industrial Chemicals' product is 3.5 milligrams per pound of product. The concentration of Vitamin B₁₂ in these products has a very wide range. Pure Vitamin B₁₂ and animal protein factor concentrate are not equal to each other in their growth promoting ability. The concentrate is more effective in promoting growth on a Vitamin B₁₂ content in the ration basis.

Vitamin B₁₂ is definitely necessary in chicken feeds to obtain maximum feed effectively and for good hatchability of eggs. The advantages of animal protein factor concentrate greatly outweigh the disadvantages. The advantages of this new concentrate are that it and soybean meal can replace costly and hard-to-get animal proteins, it will produce better feed efficiently when supplemented to some commercial rations containing seven and one-half per cent animal proteins, and it reduces the total cost of the diet from two to six per cent. The two disadvantages of animal protein factor concentrate are that it is not readily available to farmers so that they can mix it in their own feed and its cost is high, but the cost is offset by more economical production. The most noticeable effects of a deficiency are slow growth in chicks, excessive mortality, and low hatchability. Other effects of a deficiency are lowering of the feed efficiency, poor feathering, and gizzard erosion.

Numerous experiments have been conducted with chickens to determine how effective animal protein factor concentrate is in promoting growth

and increasing feed efficiency in rations containing animal proteins. Experiments have also been conducted to see if this concentrate and soybean meal could completely replace the animal proteins in a chicken ration. L. C. Norris and his associates found in one experiment that ten and four-tenths micrograms of Vitamin B₁₂ per pound of ration resulted in an additional gain of one and sixteenth-hundredths pounds in four weeks. Animal protein factor was the only source of Vitamin B₁₂ in this ration. Pure Vitamin B₁₂ produced the same results. T. Stevens and his associates found that when hens were fed a rich animal protein ration, Vitamin B₁₂ will not increase growth in chicks hatched from eggs laid by these hens, but will increase the feed efficiency of these chicks. They also found that even though it is present in amount for normal growth, it may not be present in a sufficient amount for maximum feed efficiency. In one of E. L. Johnson's experiments one-half percent animal protein factor concentrate increased chick growth twenty-two percent during the first eight weeks. The feed efficiency was two and six-tenths for the all-vegetable ration and two for the all-vegetable plus one-half percent animal protein factor concentrate ration. In a practical test seventeen-hundredths percent animal protein factor concentrate increased the feed efficiency from three and seventeen-hundredths to three. The basal ration contained six percent fish meal as the only animal protein. Soybean meal with one percent animal protein factor concentrate was equal to four percent fish solubles in promoting growth under the same conditions. United States Industrial Chemicals' concentrate was much more effective in promoting growth than Merck Laboratories' concentrate on a Vitamin B₁₂ content basis, but the latter one was slightly more effective on an animal protein factor concentrate content basis. The feed efficiency was not printed with this experiment. United States Industrial Chemicals conducted an experiment with their concentrate to determine if it and soybean meal could replace the animal protein in a high quality commercial broiler mash. A feed efficiency of three and seven-hundredths resulted when a commercial broiler mash containing five percent fish meal and three and three-fourths meat scraps was fed, and a feed efficiency of two and ninety-seven hundredths resulted when .175 percent animal protein factor concentrate was used. In the latter ration more soybean meal was added at the expense of all the animal protein and some of the corn. The protein percentage in both rations was the same.

Experiments with laying hens prove that Vitamin B₁₂ is absolutely essential for normal hatchability. L. C. Norris and his associates found that when hens were fed a ration containing no Vitamin B₁₂

for some time, the hatchability of eggs from these hens declined to twenty-five percent. Idaho State College fed an all-vegetable diet to laying hens for several months. None of the fertile eggs produced by these hens hatched. A one percent animal protein factor concentrate in the ration increased the hatchability to sixty-eight percent in four weeks. Hens that had been fed a diet with a high percentage of animal proteins were put on Vitamin B₁₂ deficient diets. The eggs from these hens maintained a hatchability of eighty-five percent after being on this diet for four months.

Several researchers who have experimented with Vitamin B₁₂ and animal protein factor concentrate in chick diets have made recommendations on how much Vitamin B₁₂ to use in chick diets. There is a wide range in the recommendations made by the different researchers. A sufficient number of experiments have not been carried out with pullets or hens to make recommendations, but it is usually taken to be the same as for chicks. Dr. Gerald Combs recommends a five percent animal protein ration even if vitamin is added in another form. In direct contrast G. M. Briggs, E. G. Hill, and M. J. Giles state on the basis of experiments that animal proteins are not needed for fast gain and economical production. J. C. Fritz recommends ten to twelve micrograms of Vitamin B₁₂ per pound of ration. He also states that the requirement for Vitamin B₁₂ increases as the protein content increases. Five micrograms of this vitamin per pound of diet was found to be sufficient when undepleted chicks were used. The Minnesota high energy-low cost starter ration contains seven and one-half micrograms of Vitamin B₁₂ per pound of ration. The "Super Laying Mash" which is mixed and sold by a farmers cooperative contains one-tenth percent animal protein factor concentrate and three and three-fourths percent meat scraps as the only sources of Vitamin B₁₂. As a result of work conducted at Cornell University, it appears to researchers that under practical conditions, chick starter rations should contain one and one-half to two micrograms of Vitamin B₁₂ per pound of diet.

The cost of producing Vitamin B₁₂ in the form of a concentrate has dropped by more than one-half since it first became available in the fall of 1949. The present cost of Merck Laboratories' animal protein factor concentrate is one dollar and thirty-three cents per pound in fifty pound lots. An all-vegetable ration can be supplemented with animal protein factor concentrate at a cost of fifteen cents per hundred pounds of feed. An estimate has been made that farmers saved ten million dollars in their feed bill during the last six months through the use of animal protein factor concentrate.

Agrarian Philosophy

By the Editor

When May 13th rolled around this year, the students at Clemson again put on their annual Mother's Day spectacle. It is only fitting that we should have paused a moment to think just what Mother's Day should mean to us.

To many Clemson students Mother's Day probably meant just a day on which they must clean up their rooms a little better than usual; On which they must watch their language because some lady might be around on the halls; or on which they must parade on a hot Sunday afternoon in hotter blouses. To these people, Mother's Day at Clemson must have seemed like wasted time and effort. To many other students, Mother's Day probably denoted a day on which their mother brought a picnic lunch up to Clemson and they were granted a brief respite from messhall chow and enjoyed a feast on some of Mother's home cooking. Yet these are the same students that were always complaining about not being able to go home more often, who always sat in the messhall and exclaimed, "This isn't like my Mom's home cooking." These are the students who have lost the true meaning of Mother's Day.

This being the case, let us ask ourselves just what is Mother's Day. What does this day signify? What is the true meaning behind Mother's Day? To properly answer these questions, we should decide first just what our mothers mean to us. First, being a Mother is the most painful thing in the world. That is painful not only physically but also emotionally as well. A mother must watch a child that was once a physical part of her body grow older and farther and farther away from her. She must not only watch this process of separation, but she must aid it. She must all the time seek to build up her child's independence, and yet, every step of the way she is tearing into her own heart. Yet all this and more she gladly does for the sake of the love she bears her son. To us, the students at Clemson, as well as to all other young adults, our mothers should bring to mind the person who brought us into this world: the person who made it possible for us to take the step into adulthood that we are now taking.

Now, having decided just what our Mothers mean to us, we are in a position to determine just what Mother's Day should mean. Mother's Day

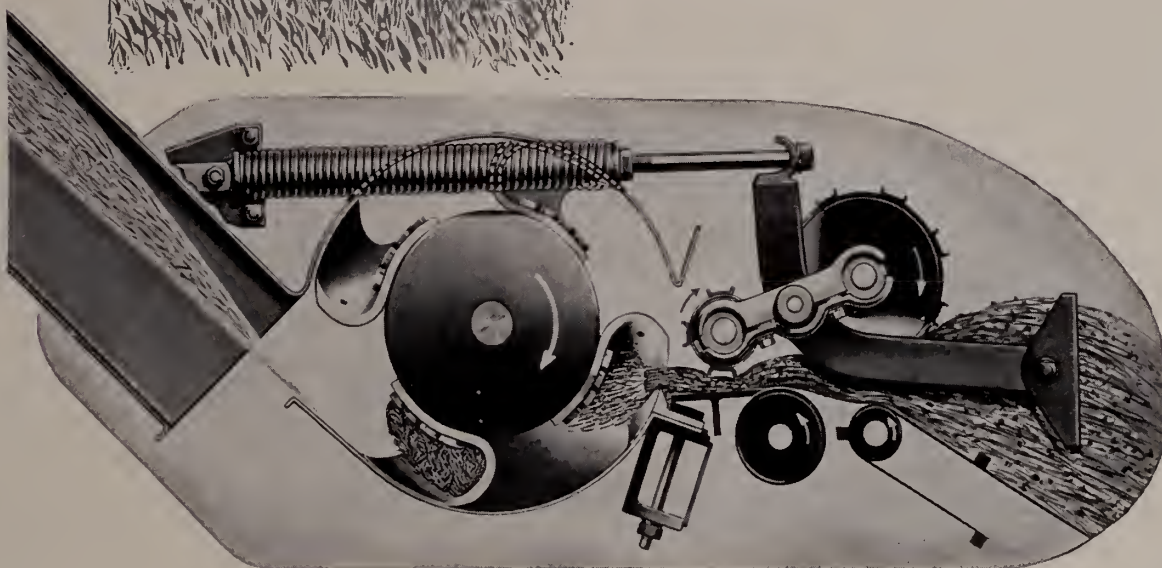
should be the most important day in the year to persons of our age. It should be a day when we rededicate ourselves and our love to these mothers who have done so much and who have sacrificed so greatly to make us what we are today and what we will be tomorrow. It should be the time for us to show our mothers more than ever that we honour, respect, and love them. It should be a day when a mother can look at her son or daughter and say to herself with pride, "This is my child; I made him what he is today, and he loves me for it." It is also the guiding hand of our mothers that shapes us into the personality that we are. All of our actions, all of our thoughts, all of our character is a product of the type of environment that our mothers have provided for us through our homes. Thus we should remember that all of our deeds reflect upon the kind of rearing that we have been given and that through this they reflect upon our mothers. This being true, we should, on Mother's Day, rededicate our lives and determine to try to live them in such a way as to bring credit and pride to our mothers.

This, however, is an agricultural magazine, and we should try to clarify just what Mother's Day should mean to the son of a farmer. To the boy raised on a farm, Mother's Day should have more meaning than to any other person, for on a farm the mother exerts more influence on her children than in any other place. The farmer's wife represents the true spirit of the home more than any other type of wife. The whole farm revolves around this important person, and she brings it to a closeness and unity that cannot be achieved in any other type of home. The boy from a farm is particularly lucky when it comes to his mother, and he should not be ashamed to show his mother on Mother's Day that he realizes this advantage which she has given to him and that he appreciates it from the bottom of his heart.

Thus, we have decided just what a mother means to us and just what Mother's Day is for. Now, we should be determined more than ever to make each Mother's Day a special day on which it is our opportunity to prove to our mothers our deep devotion and love for them and our great gratitude and appreciation for all that they have done for us. God bless them!!



it began with
grass and a cow



GREEN feed the year 'round — like the grass a cow harvests for herself — that was the need which Allis-Chalmers set out to meet with this Forage Harvester.

Engineering started in the field and *stayed* in the field until many problems were answered — big capacity without big power demands . . . adaptability to standing hay crops, row crops, and windrows . . . protection against rocks . . . and easy, uniform sharpening of all cutting knives.

A critical inspection of the A-C Forage Harvester will disclose an outstanding example of the way agricultural engineering finds better answers—with design which begins in the field with basic needs and ends with agricultural machines of outstanding performance.

"Inside Story." Side view of A-C Forage Harvester's feeding and chopping system. Feed rolls (right) control incoming material to within two inches of shear-bar. Spiraled, cup-shaped knives of chopping cylinder shear and chop cleanly across full 36-inch width.

The Allis-Chalmers Forage Harvester is a 3-in-1 machine, for standing grass crops, row crops and windrows.



ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Was Darwin Right? . . .

Continued from Page 6

And in these past 50 years our livestock per capita has declined from 2.65 to 1.3 animals per person.

Oh, but you say that science will solve all this by producing more food per acre! But what happens when that last acre of ground is producing to capacity and population is still growing?

And don't think that this is just something in the distant future that won't concern you. Population today is increasing at a tremendous rate, for a 25% increase of the world's present 2.25 billions is a big increase, whereas when the earth had only a million inhabitants, an increase in this proportion didn't mean much. It has been estimated that even if the South's population keeps increasing at its present rate, in 300 years there will be 300 million people here. Can the South support that many?

Do you still want to send our valuable resources and food to overpopulated foreign lands? And are you still in favor of letting all the poor, displaced persons into this country to reproduce and further increase population?

The cold truth remains that America is going to face a food crisis at some time in the future. Will she follow the paths of the Chinese, the Romans, the Greeks, the Turks, the Egyptians, and the failing British Empire, or will she stand the test of

time? I think she will stand the test and I'll tell you why:

It is evident that the only way to lick Darwin's principle is to halt the increase in population. I think this will come about in America due to a natural process, the idea of which I received while looking at some statistics in a genetics book. It seems that the birth rates of uneducated people average high, about 5 or six children per family, while educated people, such as teachers, doctors, lawyers, and others, average slightly more than 2 children per family—just enough to replace the parents and to allow for bachelors, accidental death, etc. Of course, there are many exceptions, but the overall picture is the important thing.

The wheels of population are already slowing down. Although our population is still increasing at a rapid rate, the *percent* increase is declining as the privilege of education is made more and more available to all. The processes of education must be speeded up. Birth control is another answer.

I cannot explain this phenomenon of education's limiting population: but I do know that Darwin underestimated man when he placed him in the "All-organisms" class, whose fate is to be determined by the laws of chance. I can picture but a Master Plan, with man, the divine form of life, playing an important role.

Suni Citrus Pulp

is popular with
progressive
Dairymen
because . . .

1. IT is an excellent cattle conditioner.
2. IT will take the place of BEET PULP.
3. IT has a tonic effect upon the animal.
4. IT will produce good milk flavor.
5. IT is a bulky and succulent feed.
6. IT contains 1520 pounds of digestible feed per ton — therefore a cheap source of digestible nutrients.

"They Moo for More"

SUNI-CITRUS is rich in milk-making units, brimming with bovine health and happiness. That's why . . .

Cows Love SUNI-CITRUS PULP

"It Woos the Moos"



Suni-Citrus Products Co.

HAINES CITY, FLORIDA

Sales Agent: ASHCRAFT-WILKINSON CO., ATLANTA, GA.

Agriculture Meets Industry

Continued from Page 8

for their industrial goods, but tariff barriers would mean that the southern farmer could no longer exchange his goods for cheap foreign merchandise.

Since the civil war the southern farmer has had to contend with farm land that has lost much of its fertility and productivity and with the loss of cheap farm labor. The state has progressed a long way since the war but does not enjoy the station among the states that it once held.

The question arises, will the awakening of the industrial possibilities of the state make South Carolina supreme again, and will the state forsake its agriculture for the more profitable industrial enterprises? Is it too early to consider such possibilities?

Agriculture in South Carolina is becoming more permanent. Year round grazing programs are challenging King Cotton for

top honors. Cotton, which once forced cattle out of South Carolina, finds a more worthy opponent this time. The abundance of cheap labor which first helped cotton in is no longer available, and even with the advent of successful mechanical pickers, cotton growers must face threatening competition from growers in the West.

With the coming possibility of industry in the South, the possibility of further losses of farm man-power to industry is inevitable, even though some immigration of northern workers would be expected.

Looking into the future, is it not possible to visualize a great industrial state with livestock production predominating the agricultural scene? Perhaps the recent livestock expansion in this state is fortunate and timely, for livestock can integrate with industry leaving industry the labor monopoly that it must have. The permanence of a live-

stock program leaves agriculture in this state with new hope of continued existence.

The Gerrish-Milliken textile mill at Pendleton, South Carolina, with its livestock landscaping job has been described as, "Where Agriculture and Industry Meet". The cattle are still grazing away at the ladino-fescue pasture in front of the mill.

The above are only speculations, but industry in South Carolina has been expanding rapidly in recent years, but with the possibility of further industrial expansion comes the realization that the state has two appealing inexhaustable natural resources—water and sunshine. Because of these two resources the soil becomes a valuable asset. The soil's resources are exhaustable, but pasture land will hold its potentials intact for future generations. If industry does come, its factories may be welcomed and complimented by a livestock state.



PENDLETON FERTILIZERS

MADE BY

Pendleton Oil Mill

PENDLETON, SOUTH CAROLINA



Seven Oaks Poultry Farm and Hatchery

Spartanburg, South Carolina

Hatchery Chicks The Year Around

At Clemson and at Edisto and Summerville branch experiment stations we saw intensive work under way on year-round pastures and pasture drainage.

That's another part of the pattern: South Carolina is diversifying its agriculture, is balancing crops with livestock.

IV. Balancing Agriculture With Industry

"For many years South Carolina has had nearly as great cash income per acre of cropland as Iowa. But we have had five times as many people per land unit as they have. To get greater per capita income we must increase the size of our farms and decrease the number of people on them."

So said Clemson's C. G. Cushman, leader in dairy extension work. Grassland farming requires much less labor than crop-farming and is bringing on just such a transition. And in crop-production tractors are displacing farm hands. Where are the surplus people going—those no longer needed on farms? Into industry, most of them. South Carolina

has been one of the leading states in the nation in increasing industry since the war. And many of its farm people are filling the thousands of jobs that industry is providing.

Since 1945 more than 800 new industries have been built in the state at a total cost of \$385 million. Major expansions have been made in more than 1,000 additional plants at a cost of \$269 million. Notable among the new industries is the tremendous Du Pont plant near Camden. The Singer Sewing Machine Company is building a \$10 million plant near Clemson. The vast textile industry in the Piedmont is booming. Near Charleston there is a potential industrial area of nearly 10,000 acres with a fresh water supply so abundant it has drawn national attention through a leading article in the *Saturday Evening Post*.

But by far the most spectacular recent industrial event in the state is the erection of the U. S. government's \$600 million H-Bomb plant on a site of some 250,000 acres along the Savannah River. This plant will employ an estimated 8,000 workers. Its effect depicts in miniature what the coming of industry is doing all over the state. Farmers in the area know it will make farm labor scarce. They are rushing to buy more farm equipment. This will enable them to tend more land, will eventually mean larger farms.

That rounds out the fourfold Pattern of Progress: South Carolina is balancing agriculture with industry.

How these famous
Armour chefs
help market the
products of
U. S. farming



Above you see the famous chefs who work in Armour and Company's New Product Kitchen developing new and better products for the Armour line of foods.

As more and more shoppers buy these new Armour products, the demand for the "raw materials" from U. S. farms tends to be strengthened. So, actually, these chefs are helping to market farm products—helping to make U. S. farming more secure.

If you have a farm of your own in years to come, you'll find Armour and Company vitally interested in the success

of your farming, too. You'll find that Armour is a good company to do business with.

Or, as a graduate of an agricultural school, you may be interested in the many job opportunities Armour has to offer. Should you wish specific job information write to: Armour and Company, Personnel Division, Union Stock Yards, Chicago 9, Illinois.

ARMOUR
AND COMPANY

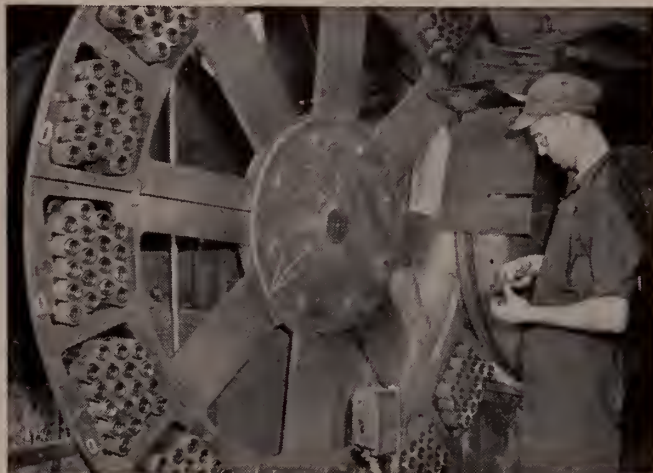
Such is the fourfold pattern we saw spread before us as we rolled from the mountains to the sea. It is a dynamic pattern, at times ruthless. But the direction is ever onward and upward. It was fascinating to watch this ancient agricultural state casting off the shackles of a one-crop system and marshaling all its forces for the Better Day ahead. And South Carolina farmers and agricultural leaders are the vanguard of this new Forward March!

Why IH springs stay lively longer

*A report to you about men and machines
that help maintain International Harvester leadership*



Automatic coiler "hatches off" 10,000 springs a day. It is one of many automatic machines that coil more than 5,000 different springs for IH products. These high quality extension and compression springs are made from thread to finger-size wire. They are as thin as $\frac{1}{16}$ of an inch . . . as thick as five inches . . . as short as $\frac{1}{4}$ -inch and as long as five feet!



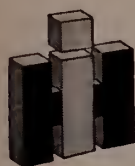
"Ferris wheel" ride makes springs act alike. A slight difference in length makes a big difference in the performance of the same spring. That's why the length of valve springs may vary only a few thousandths of an inch. Here are 288 corn planter springs riding the "ferris wheel" through a big grinder which makes them all *exactly* the same length.



Every valve spring must prove its strength. After IH springs have passed many gauging tests during manufacture, they are subjected to a load test—forced to confess their true strength on the scales. Their strength must not be more than five percent above or below normal. The scales themselves are checked for accuracy by their manufacturer every month.



Millions of "push-ups" test valve spring stamina. This valve spring tester, which simulates actual engine operation, compresses valve springs millions of times. When this fatigue test is completed, the length and compression of these springs is double checked. They must not shrink in length or load beyond the rigid standards to which they are designed.



INTERNATIONAL HARVESTER

Chicago 1, Illinois

International Harvester Builds McCormick Farm Equipment and Farmall Tractors . . .



Motor Trucks . . .



Crawler Tractors and Power Units . . .



Refrigerators and Freezers . . .



Campus Interviews on Cigarette Tests

Number 8...THE BALTIMORE ORIOLE



"I don't
go for a wild
pitch!"

Clean-up man on the baseball nine, this slugger doesn't like to reach for 'em . . . wants it right over the plate. And that's the way he likes his proof of cigarette mildness! No razzle-dazzle "quick-puff" tests for him. No one-whiff, one-puff experiments. There's *one* test, he's discovered, that's *right down the alley!*

It's the test that proves what cigarette mildness *really* means. THE SENSIBLE TEST . . . the 30-Day Camel Mildness Test, which simply asks you to try Camels as a steady smoke—on a pack-after-pack, day-after-day basis. After you've enjoyed Camels—and only Camels—for 30 days in your "T-Zone" (T for Throat, T for Taste), we believe you'll *know* why . . .

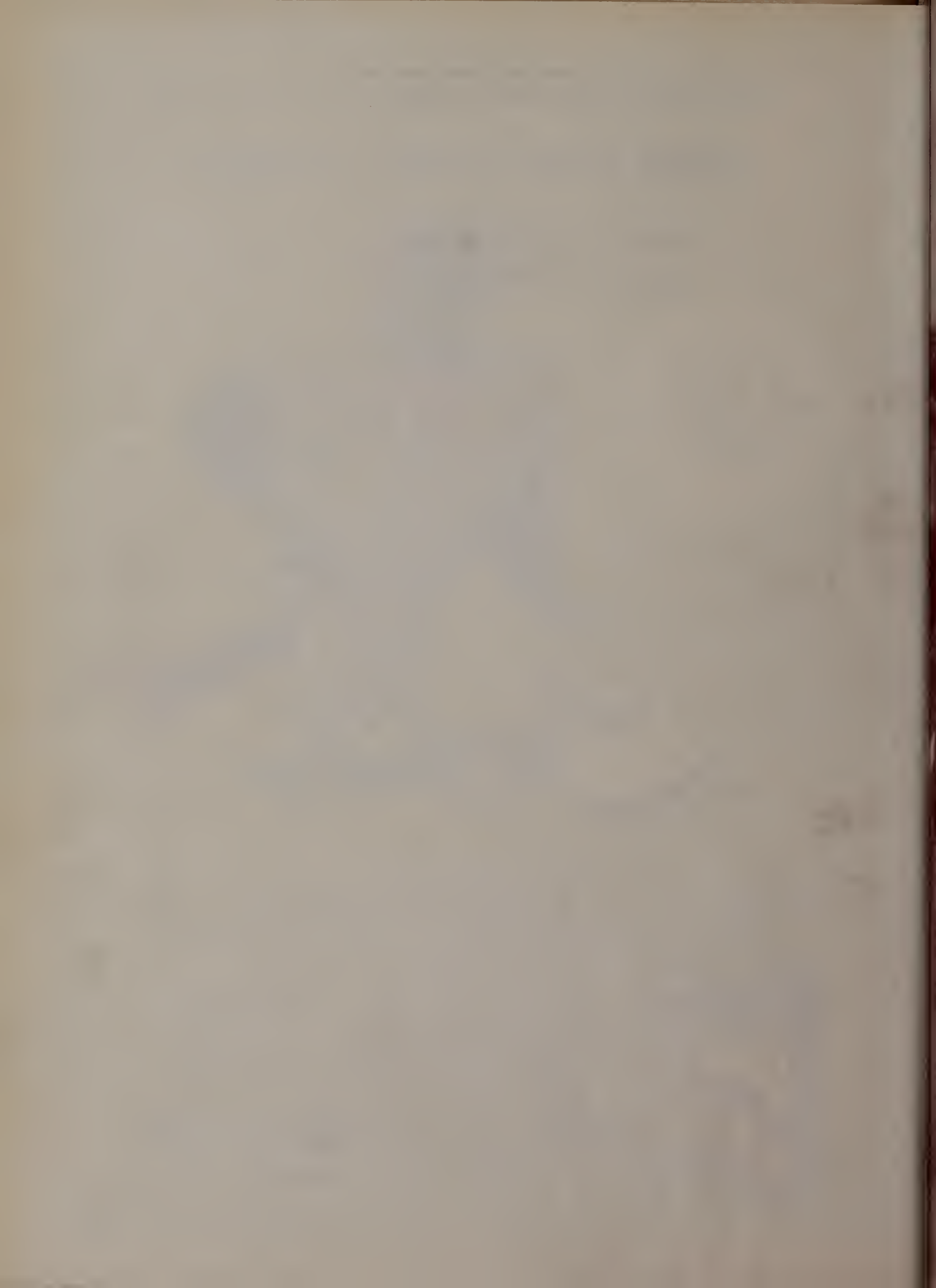
More People Smoke Camels
than any other cigarette!



CLEMSON COLLEGE LIBRARY
CLEMSON, SOUTH CAROLINA

VOLUME 11 WAS NEVER PUBLISHED.

PLEASE BIND THIS SHEET IN.



The Agrarian

OFFICIAL STUDENT PUBLICATION

CLEMSON UNIVERSITY • CLEMSON, SOUTH CAROLINA

12-1
Jan 5



SERVING THE FARMERS IN NORTH AND SOUTH CAROLINA SINCE 1906

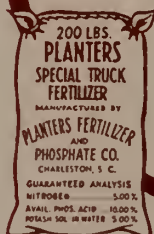


VIEW OF THE Planters Fertilizer & Phosphate Co.

We maintain the highest standard of excellence in the manufacture of Planters Fertilizers. Our trade-mark on every bag is a guarantee that you are getting the Best Fertilizer Made. To produce increased yields, fertilizer must contain:

NITROGEN • PHOSPHORIC ACID • POTASH

In such proportions that it furnishes available and soluble supply of plant food at all times. Thousands of Farmers all thru the South testify to the great results secured from the use of these well known brands:



"SPECIAL MIXTURE FERTILIZER".....	4-10-6
"SPECIAL MIXTURE FERTILIZER".....	3-9-9
"PEE DEE TOBACCO FERTILIZER".....	3-9-6
"SPECIAL TRUCK FERTILIZER".....	5-10-5

They will produce larger crops, enrich the soil and make it more productive for future crops. Ask our agent or write us direct for information about the best fertilizer for your land.

Planters Fertilizer & Phosphate Co.
CHARLESTON, S. C. CHARLOTTE, N. C.



Planters Fertilizer & Phosphate Company

Charleston, S. C.

Charlotte, N. C.

THE AGRARIAN

Volume 12 The Clemson Agricultural College Number 1

William F. Stewart Co-Editor	Joe W. O'Cain Assoc. Editor	Ronald M. North Co-Editor
Peter L. McCall Advertising Mgr.	James P. Flavin Business Mgr.	W. Joe Cunningham Circulation Mgr.
Jerry Hammett Feature Editor	Vance A. Loy News Editor	
Harlon E. Joye Departmental Editor	Jimmy E. Young Asst. News Editor	
Baxter M. Hood Asst. Feature Editor	Richard C. Hall Rudolph Kemmerlin Asst. Departmental Editors	
Photography Jack Trimmier Ramsey Hawkins		
Jackie Sanders Asst. Bus. Mgr.	Edwin Nolley Asst. Cir. Mgr.	William E. Byrd Asst. Adv. Mgr.

Departmental Writers—

Cecil G. Walters, John B. Stanley, Howard N. Rawl, Harry D. Vildibill, W. E. Shelley, Donald B. Dunlap, Pat Fulmer, W. R. Garren, P. D. Dukes

Advertising Staff—

J. W. Shealy, Jim Wilson, Robert E. Poston, John Turner, A. D. Owens

Circulation Staff—

Jack A. Salters, Lock McKinnon, E. L. Phillips, W. R. Garren, D. F. Holland

Advisors

O. E. Goodale
T. L. Senn

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising rates: one-fourth page, \$15.00; one-half page, \$28.00; one page \$50.00.

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

IN THIS ISSUE

Guest Editorial	Page 3
June Bugs in January	Page 5
The Agrarian Presents	Page 6
We Salute	Page 7
Yardsticks of Chicken as An Egg Factory	Page 8
Winter Care of Livestock	Page 10
Down to Earth	Page 11
Horticulture A Great Science	Page 12
Soil Conditioners	Page 13
Club News	Page 14
Pre-Forestry at Clemson	Page 18
Guilty or Not Guilty	Page 22
News	Page 24
Gardening Tips	Page 30

Editorial

By JOE O'CAIN
Associate Editor

* *

GOD GIVES MAN FOREST BEAUTIFUL . . .

Genesis 2:8-9

"And the Lord God planted a garden eastward in Eden; and there he put the man whom he had formed. And out of the ground made the Lord God to grow every tree that is pleasant to the sight, and good for food; the tree of life also in the midst of the garden, and the tree of knowledge of good and evil."

AND GIVES HOME TO CREATURES OF THE WILD

Ezekiel 31:6

"All the fowls of heaven made their nests in his boughs, and under his branches did all beasts of the field bring forth their young . . ."

Psalms 104:12

"By them shall the fowls of the heaven have their habitation, which sing among the branches."

COVER

The cover this month exemplifies the ever-new and fresh love of a boy for a special pet, and on the farm most boy's best animal friend is the calf. The boy is three year old Mish Barnett of Clemson. Photo by Jack Trimmier.

Photos in this issue courtesy the Extension Service and Ramsey Hawkins.

Your Trade Mark
**For Quality Hybrid Seed
 Corn**



Also
 Wholesale Producers And Distributors of Cotton
 Seed, Wheat, Oats, Soybeans, Tobacco Seed, Les-
 pedeza and Crotalaria.

McNAIR'S
Yield-Tested Seed Co.
 Laurinburg, North Carolina

See us for your Household Needs
FURNITURE, APPLIANCES, CARPET,
 Etc.

*Everything
 For Farm & Home*

Buick, Ford Automobiles
 International Trucks, Sales-Service

DENMARK
IMPLEMENT CO., INC.

—Phone 3963—
 Denmark, S. C.

*There's Pay Dirt
 in
 Aromatic Tobacco*

Many Farmers In The Piedmont Section of S. C.,
 N. C., Ga., Tenn., and Va. Have Found "PAY DIRT"
 In The Production Of Aromatic Tobacco For Which
 Southeastern Affords A Ready Market.

SOUTHEASTERN
Aromatic Tobacco Co.

1628 East River Ext.
 Anderson, South Carolina

CLEMSON MEN ARE
 ALWAYS WELCOME

At

SEIGLER'S
STEAK HOUSE

A Good Place To Eat

Walhalla, S. C.

GUEST EDITORIAL

HATS OFF!

B. E. GOODALE

The first issue of THE AGRARIAN was published in December 1938. It was the first magazine to be published by Clemson students to serve a particular school and disseminate information to those interested in Agriculture. Student leaders from the school of Agriculture and the Department of Vocational Agricultural Education have been responsible for THE AGRARIAN over the years. The teamwork of these young men has not been applauded like other team play better known to sports fans. Only one who has taken active part in the creation of an issue of a magazine can appreciate the time and work involved. Students who have made THE AGRARIAN a true organ of service to thousands of agriculturists have had but one reward, the satisfaction of a job well done.

The business staff of THE AGRARIAN has extra responsibilities because the only income is from advertisements. The many tens of thousands of AGRARIANS mailed free to promote better agricultural practices have provided a service made possible by advertisers, but tribute should be paid

to students who have labored so diligently in selling the advertising space.

It is good for students to work together in creative effort. It is good for the faculty to assist students in any effort which will develop a spirit of cooperation. AGRARIAN staffs have helped build Clemson's School of Agriculture. The AGRARIANS have been strong links in a chain connecting the agricultural faculty, students and alumni, holding them together with common interests.

To the new staff, it would be well to say, "Hats off to the Past, and Coats off to the Future!" New departments, new services, new ideas should be promoted. Too few people in South Carolina are well informed about Clemson's School of Agriculture and Department of Vocational Agricultural Education. You are challenged to "tell the world" about Clemson. THE AGRARIAN can be an organ of publicity so full of good reporting and editing about Clemson's facilities and services that we can point with pride to our part in making Clemson bigger and better in all ways.

DEDICATION

The Agrarian staff wishes to take this opportunity to show its appreciation to all of the persons who worked so earnestly and dilligently in helping to reorganize and put The Agrarian back on its feet. We only hope that we can hold down our end of the line as well as you did in helping us get this first issue into print.

It is to these faithful people that we dedicate this issue of The New Agrarian:

Dr. R. F. POOLE
DEAN H. P. COOPER
MR. HAMILTON HILL
MR. K. R. HELTON
PROF. B. E. GOODALE
PROF. T. L. SENN
PROF. W. N. McADAMS
PROF. B. M. RITTER
MRS. JANE STEELE

June Bugs in January

By DON DUNLAP
Horticulture '54

Remember the fun we used to have in the summer months tying strings to June Bugs' legs—then they would fly round and round. Entomologists now report that these playful insects are destructive and should be of more concern in January than in June. However these Agricultural leaders are having a certain measure of success and experience in the control of these insects.

Maybe you have forgotten the exact appearance of the June Bug, but a brief description might picture the insect in your mind. It is a large, somewhat flattened green beetle, with the margin of the body bronze to yellow, nearly one inch long and half as broad. It feeds on the foliage of the peach and also on the peach fruit just before ripening. The adult also feeds on the foliage of other plants and trees, sometimes attacking ears of corn, and fruits and vegetables of the garden. The larvae do considerable damage to the roots of grasses in addition to attacking the roots of vegetables and ornamental plants. Probably tomato and tobacco plant growers and pasture owners have been the most interested in the control of the insect recently.

Before the insect becomes an adult, it goes through a stage called the grub stage. During the winter months the grubs burrow deep into the soil; in the spring they come closer to the surface of the soil and continue development by feeding mainly on decaying vegetable matter. During heavy rains they tend to come to the surface of the ground. The grubs become full grown by midspring, change in an eathern cell in the ground to the pupal stage, and in July and August emerge as beetles.

Their eggs are laid in rich soil with decaying vegetable matter. There is only one generation of June Bugs every year.

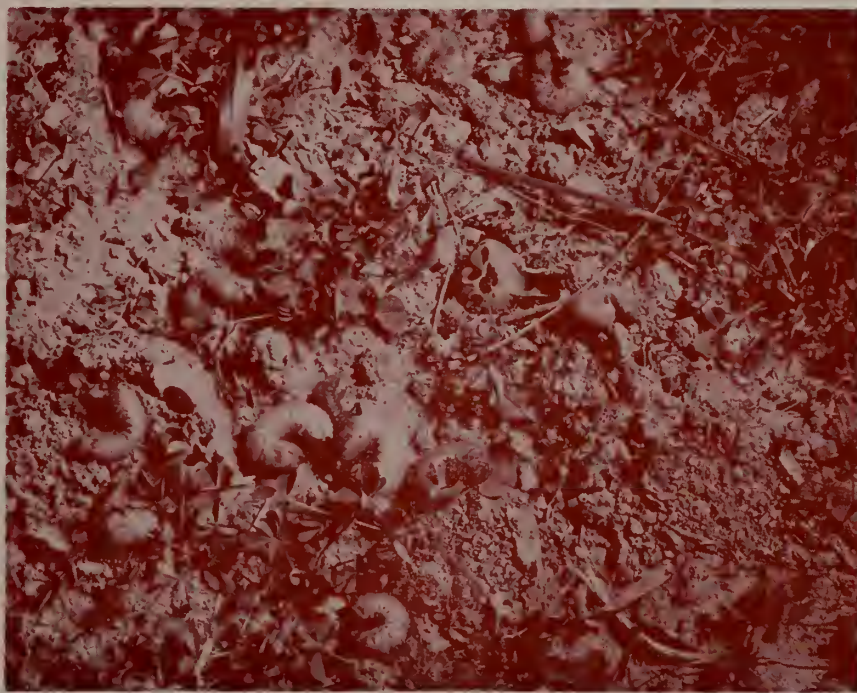
For the control of grubs in tobacco beds, entomologists suggest dusting the bed with one to five pounds of 1% Parathion to 100 square feet as soon as damage is noted.

Manure piles in the vicinity of orchards may act as breeding places for the beetles and so increase their number in the orchards, 'V' shaped troughs and flower pots have proved very effective in trapping the larvae.

Some of the organic poisons used in experiments are Para'hion, which

is quick acting but does not last long as an insecticide in the soil; Chlor-dane, Aldrin, Dieldrin, and some others which cannot be evaluated.

Very promising results were obtained by a demonstration performed recently on J. K. Earle's Dairy Farm in Greenville County. Para'hion was mixed in irrigation water, was applied on his pasture, and seemed to be very effective in killing the grubs. The grubs tend to emerge from the soil due to the action of the contact poison, the presence of water, and the fumes from Para'hion. However this is not a definite answer to the control of the grubs and no recommendations have been released. Additional research is necessary before definite conclusions can be reached.



Excessive moisture brings grubs to the soil surface.

The Agrarian Presents:

Dr. John B. Whitney, Jr.

By HARRY VILDIBILL

Botanist Scientist Educator

From farm boy to botanist, Dr. John Whitney of Clemson College is now at Oak Ridge, Tennessee, studying the application of Atomic Science to Agriculture. This new field of science has opened another door for the botanists to learn more about mineral absorption and utilization in plants through the use of radio active elements which can be traced wherever they go. Dr. Whitney was born in Augusta, Georgia, in 1916. He grew up much like any other farm boy would, but even in his very earliest years the future botanist had a keen interest in plants. It was fortunate for young John Whitney that his grandmother was a naturalist for through her he began to understand more and more about plants. His zeal grew greater and greater through her continued search for plants that could be adapted to Southern conditions. His grandmother's garden in Augusta was a paradise where young Jack (which was his nickname) came to spend many pleasant evenings.

When old enough, Jack entered Richmond Academy in Augusta, where he received his last two years of high school and his first two years of college work. During the first two years at Richmond Academy, he



Dr. John B. Whitney

was on the track team, and during the last two years he played football.

Following this period of schooling, Jack entered the University of Georgia, majoring in Botany, and becoming an honor student. He was interested in dramatics, debating, and glee club work besides being on the Business and Editorial staffs of college publications.

During the summers Jack was nature instructor at a scout camp. Graduation came but this was not the end of Dr. Whitney's college education. He went on to earn his M. S. degree at the North Carolina State College of Agriculture and Engineering. In the summers now he worked with the Experiment Station at Raleigh, where most of his work was with cotton. At N. C. State he was on a fellowship and upon graduation he received another. This time the fellowship took him to Ohio State University, where he met a student botanist who later became Mrs. Whitney. The summers now were spent at Mountain Lake Virginia Biological Station, where he plunged deeper and

deeper into the mysteries of the plant world. Finally, Dr. Whitney emerged with three degrees—B. S., M. S., and Ph. D.

In 1941 the war had begun in Europe. America's supplies of European materials were cut off and there became a greater need for substitutes. Dr. Whitney joined the research staff at the Eucusta Paper Company in Brevard, North Carolina. Here he was plant physiologist, finding flax plants from which a linen paper could be made directly, instead of from linen rags as was formerly done. Since our linen supplies were cut off from Europe, a substitute way of making this paper had to be found. The whole cigarette industry depended upon it. Dr. Whitney got to work. American farms already grew flax, not for making linen as there was no linen industry in America, but for making linseed oil. The oil was pressed out of the seed, but the straw was left in the fields. Was it this straw, a by-product of the linseed oil production that could be converted into linen paper? Dr. Whitney was there to help find out and they did find out. Cigarettes all during the war were, and still are wrapped in linen paper made from straw instead of linen.

The United States was in war now, and Dr. Whitney's new title became Private John B. Whitney, U. S. Infantry. He soon rose to Corporal, then Lieutenant. Our Lieutenant Whitney came back from the war. His old job was still open for him, but it was not long before Dr. Whitney came to Clemson. It was in 1946, during the summer, that Dr. Armstrong, head of the Botany Department, began looking for a residence for the new staff member who would begin teaching in the fall. It looked

—Continued on Page 23

WE SALUTE:

BOBBY DUKE

Bobby Duke hails from Kingstree, S. C., deep in the heart of the Low Country. He is a senior in Animal Husbandry, planning to graduate in June, 1953. After a short term (?) in the army, he hopes to farm, raising a few beef cattle along with growing tobacco, cotton, and corn.

When he arrived at Clemson in September, 1949, Bobby was one of the smallest and scariest rats ever to answer to "Freshman Newboy!" and feel the sting of an upperclassman's persuader. However, this did not prevent his getting off to a good start in academic work. During his Freshman year he won a Sears Roebuck Scholarship and was tapped for Phi Eta Sigma. It was after the first semester of that year that he left the ranks of the regiment to join Band Company.

The next year, as a bad but still

small Sophomore, along with a few others on the company, Duke was awarded the "Steel Paddle" for proficiency with said instrument by the Rats of 1950. During the Sophomore year he was accepted into Alpha Zeta and received the Alpha Zeta Award for outstanding scholarship in the School of Agriculture.

The next year "Young Robert" got further into the extra-curricular activities at Clemson by being accepted into Mu Beta Psi, Tiger Brotherhood, and Phi Kappa Phi and joining the Taps Junior Staff. It was with this last organization that he learned to do with about half his accustomed amount of sleep and still present at least a half awake countenance in class at eight o'clock the next morning.

After a grueling five weeks at Fort Benning, Infantry Summer Camp,

Bobby left a few days early (with many good wishes from the rest of the boys) to take advantage of Danforth Fellowship, which afforded him a two weeks stay in St. Louis, Mo. with the Purina Feed Company and two weeks at Camp Miniwanca, Michigan, an American Youth Foundation camp for boys. This month's trip is given each year to one boy from each state in the U. S., one from Canada, and one from Hawaii, by the Danforth Foundation and the Ralston Purina Company.

This year Bobby is working as Feature Editor of the Taps. He has been active in the Presbyterian Student Association, serving at different times as secretary and treasurer.

Bobby has been selected for Who's Who among Students in American Universities and Colleges and won the Borden Award for scholarships in Agriculture.

The people of Kingstree, as well as Williamsburg County, can be proud of the wonderful record made by one of her outstanding sons of agriculture.

We salute—Robert W. Duke.

RESOLUTIONS TO KEEP — for the farm family.

RESOLVE TO:

1. Plan your farm program—as a family—for 1953 and don't just let it happen. Planning helps to take the guess work out of farming and **WELL THOUGHT OUT PLANS RARELY RESULT IN WORN OUT ACRES.**
2. Follow a soil building program—**IMPROVE THE WORST AND MAKE THE GOOD BETTER.** Good soil is like a good bank account; you have to make a deposit every now and then if you expect to keep drawing out.
3. Keep a farm record. A pencil is one of the most important tools on the farm if you will only make use of it. **YOU CAN DISCOVER A LOT OF LEAKS IN YOUR FARM INCOME THROUGH THE KEEPING OF FARM RECORDS.**
4. Increase your knowledge of farming by reading technical publications on the subject and by sharing the experiences of other people who are doing the same job. **PROFIT BY THE OTHER FELLOW'S MISTAKES.**
5. Make some outstanding home improvement. There is nothing gained in the mere accumulation of wealth.
6. Devote some of your*time to recreation—family recreation. The family that plans together will usually work together.
7. Be more neighborly in '53. Find an interest in other people and other people will have an interest in you. Friendships are cheap at any price.
8. Go as a family to Sunday School and Church each Sunday in 1953. Doesn't it impress you to see a family—father, mother, sister, brother—going to Church together? **SHOW YOUR CHILDREN** how to live instead of just telling them.
9. Cooperate with your neighbor and boost your community through some community organization. **THERE IS STRENGTH IN UNITY.**
10. Keep your resolutions, **BECAUSE WHAT YOU GET OUT OF THE YEAR 1953 WILL** depend largely on what you put into it.

(Anonymous)

YARDSTICK OF THE CHICKEN AS AN EGG FACTORY

Farmers and commercial poultrymen are confronted with the problem each winter or early spring as to which hatchery or breeder they should patronize in ordering chicks that will produce good results in the laying house. It is very important to the buyer that he purchase quality chicks for developing his laying flock. There are primarily three different official basis on which a farmer or commercial poultryman may select his flock replacement chicks. These are: the "National Poultry Improvement plan", the "Random Sample Egg Laying Tests", and the "Standard Egg Laying Tests."

The National Poultry Improvement Plan (N. P. I. P.) represents more chickens and breeders than any other official test or official organization. Since its beginning in 1935, it has been made up of the breeding phase and the pullorum control and eradication phase. The breeding phase is composed of four stages: U. S. Approved, U. S. Certified, U. S. Record of Performance (R. O. P.), and U. S. Register of Merit (R. O. M.). The last three of these are important from the standpoint of superior birds for egg production.

An R. O. P. female is one that produced 200 or more eggs in her pullet year or 180 or more eggs in her first 300 days of lay. These eggs must average at least 24 ounces per dozen. R. O. P. chicks are the offspring of R. O. P. males mated to R. O. P. females. Certified chicks are the offspring of R. O. P. males mated to Approved females.

During 1950-1951, 246 breeders in 39 states participated in the R. O. P. phase. These breeders trapnested 180,092 R. O. P. candidates of which 48.8 percent qualified as R. O. P. hens. The average egg production of these R. O. P. candidates was 198 eggs for the year's record and 55.4

percent production for the 300 day record. The N. P. I. P. now publishes each year the "R. O. P. Summary." It is the production records of the breeders who participate in the R. O. P. phase of the plan. It includes, among other things, pullets of one breed and variety on a farm, pullets entered in R. O. P., percent qualifying as R. O. P., average egg production of all pullets entered, average egg weight of all pullets entered, and average body weight. Individual breeders have records of 81.6% of all pullets entered being qualified as R. O. P., 261 eggs per pullet per year for all pullets entered in R. O. P., and a 248 egg average in 300 days for all pullets entered.

A farmer or commercial poultryman can very effectively use the N. P. I. P. and its stages as a guide in selecting the breeder or hatchery

By
HOWARD N. RAWL
Poultry '53

from which he should purchase his replacement stock. The "R. O. P. Summary" is very useful in the selection of a place to buy chicks which will make good records in the laying house. This summary can be obtained from the official state agencies or the Bureau of Animal Industries, United States Department of Agriculture, Washington, D. C.

The "Random Sample Egg Laying Tests" is a comparatively new test. The first test of this type was in 1949-50 in California. Random sample tests are also operating in New York and Georgia. These tests are designed to be a test on the same chicks that are for sale to the general public. These chicks are selected by an impartial person such as the county agent, the agriculture teacher, the R. O. P. inspector, or any other

officially-designated person. All of the entries in a particular test are under similar environmental influences. Complete and detailed records are kept on each entry in these tests.

California, the first state to have a random sample test, has completed three tests of this type. An entry in the second test consisted of 100 straight-run day-old chicks which were selected at random. The pullets were kept through a six months growing period and a year's laying period. The 40 pens which entered this test were ranked on the basis of net income above feed and chick cost per pullet chick started. The winning entry in this second test was White Leghorns with a net income of \$8.11 and 268 eggs per pullet chick started. The owner of this entry had another entry of White Leghorns in this test which placed twenty-second from the top. The average for the 40 entries was \$5.89 and 215 eggs per pullet chick entered. The best livability in the second test was obtained by an entry which had 54 pullet chicks to enter the test and 53 hens to complete the test 18 months later. The average mortality for the 40 entries was 18.2 percent. The eggs were graded in this test and one entry had a production of 198 large eggs of AA or A quality per pullet chick started. This entry ranked second in this test on the basis of net income.

The results of the "California Official Random Sample Egg Laying Tests" can be obtained by writing to the Poultry Improvement Commission at Modesto, California.

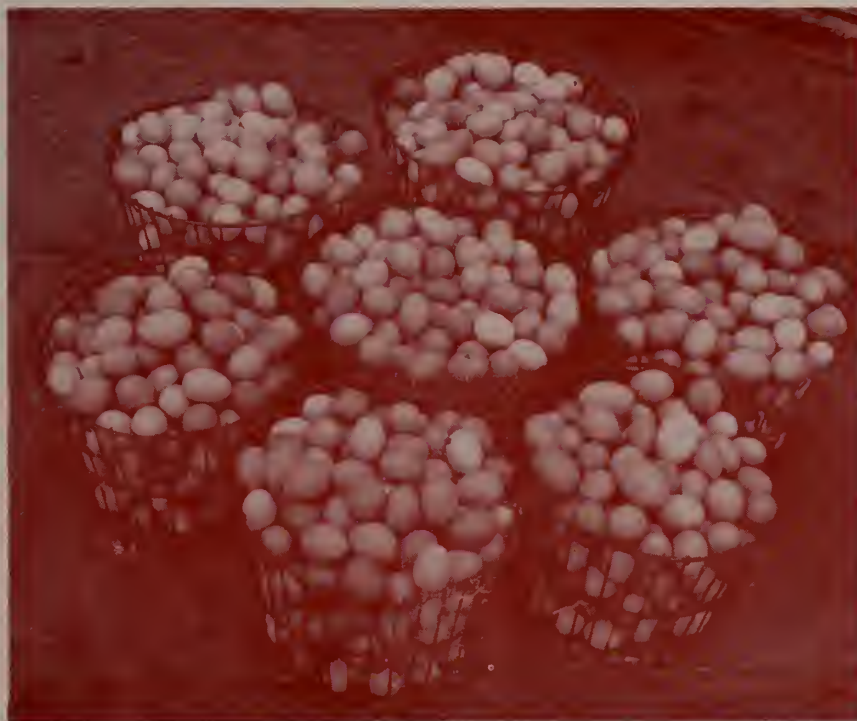
The "New York Random Sample Poultry Test" is operated somewhat differently from the California test. The chief differences are that it lasts for only 500 days, approximately 50 pullet chicks are entered, and the chicks are reared from day-old to

two weeks close to old hens. The disease most important from this standpoint is leukosis which the better breeders breed for resistance to in their stock.

Two tests of 33 entries each have been completed at the New York test. The entries are ranked on net income above feed and chick cost per pullet chick entered. The winning entry in the first test was an entry of a New Hampshire Red which won by a fairly wide margin of \$89.40. The record for this winning entry was a net income of \$2.95, an egg production of 191 eggs per hen housed, and a mortality of 28 percent for the 500 days. The average of the 33 entries was a net income of \$1.27, an egg production of 130 eggs per hen housed, and a mortality of 41.9 percent for the 500 day period. The winning entry in the second test was a White Leghorn entry with a net income of \$3.10, an egg production of 223 eggs per hen housed, and a mortality of 12 percent for the 500 day period. The average for the 33 entries was a net income of \$1.67, an egg production of 172 eggs per hen housed, and a mortality of 40.8 percent for the 500 days. An average of the 28 entries in both tests show that a New Hampshire entry had the best average on net income. The record of this entry was a net income of \$2.54 per hen, an egg production of 189 eggs per pullet housed, and a mortality of 25 percent. The average record of the 28 entries in both tests is a net income of \$1.50 per pullet, an egg production of 151 eggs per pullet housed, and a mortality of 40.6 percent.

The results of the "New York Random Sample Poultry Tests" can be obtained by writing to the Department of Poultry Husbandry, Cornell University at Ithaca, New York.

The first "Georgia Random Sample Egg Test" was started with chicks on April 1, 1951, and ended on September 15, 1952. Only one test has been completed at Georgia. An entry consisted of 100 pullet chicks selected at random. At 180 days of age, 60 pullets were selected at random and these 60 pullets made up an entry upon which the results were based.



DOZENS of good breakfasts—South Carolina needs twice as many eggs per hen or twice as many hens to produce the eggs we consume.

The laying period was 350 days. No culling was done in this test. The 28 entries were ranked on the basis of net income over feed and chick cost per pullet housed. The winning entry in this test was White Leghorns with a record of 108 eggs per pullet housed, a mortality of 14.5 percent and a net income of \$3.41. The average record of the 28 entries was 164 eggs per pullet housed, a mortality of 24 percent, and a net income of \$1.70.

The tests which are now known as the "Standard Egg Laying Tests"

have been in operation since 1911 when the first test was started at Storrs, Connecticut. The average production of all the hens in this test was 145 eggs per hen. The first pen at this test to reach the 200 mark was in 1919 when a pen averaged 202 eggs per hen. Thirty years later, the highest pen at this test produced 305 eggs per hen.

An entry (pen) in the standard tests consists of 13 pullets. The breeder selects the 13 pullets. He can enter as many pens or as many tests as he desires. At any particular test

all the pens receive uniform management practices and the same feed. The birds are trap-nested at most of the tests, but Pennsylvania is one state which is not trapnesting this year. Only number of eggs produced and the size of the eggs, both of which go together in figuring points, are taken into consideration in the standard tests. The pens are ranked on the basis of points. The tests are now carried on for a fifty weeks laying period.

There were 15 standard tests operating in 1950-51, but only 11 standard tests are operating at the present time.

The winning pen in all the standard tests in 1951-52 had a record of 302 eggs per pullet entered. A summary of the standard tests usually appears in the November issues of most poultry magazines.

Poultry Tribune presents annually an award on the basis of average number of points per bird entered to the breeder who enters 65 or more pullets of one breed in all the standard tests. This appears to be

—Continued on Page 15

Winter Care of Livestock

By HARRY VILDIBILL

Pre-Vet. '53



**Dairy Heifers
in excellent winter condition**

Having healthy animals on the farm all year 'round is something worth working for. Freedom from disease and pests plus a balanced feeding program are essentials for the success of livestock producers as well as for the health of the animals. Yet, each year, especially during the winter, many animals suffer from conditions caused by neglect.

Probably the greatest neglect occurs in an animal's feeding. Every winter many animals become poor, young animals are set back in their growth, and expectant mothers bring only weak young, or no young at all. Profits cannot be starved out of an animal grower because starved animals become very susceptible to disease. When no feed, or very little feed is given an animal, heat and energy must be taken from reserves stored in her body. The first reserve that is used is glycogen, an animal's starch stored in the liver. The next is the body fat which is the main source of heat and energy during a low state of nutrition. When the fat is gone, protein is taken out of the muscle. This is the last source of heat and energy.

A pregnant animal will keep her unborn young nourished as well as possible, even drawing proteins from her own tissues and minerals from her skeleton, but if starvation is continued, the fetus will be reabsorbed.

Early weaned calves on pasture or hay alone will live, but will they grow? This depends upon the age, the kind and the condition of the calf. If calves are taken away from

milk too soon and not allowed concentrates, growth will be slow.

A young calf's rumen is too small to hold the amount of roughage required to provide enough nutrients for proper growth. If calves are not growing well some concentrates will probably help. At Clemson the beef calves are allowed to run with their dams. As the milk supply gradually declines the calves will eat more and more roughage. By the end of the lactation period the young calves will be growing well on full pasture without even having grain. On the other hand, in a dairy where the amount of milk for calves is rationed, a grain mix is fed and some grain is given until the heifers are from eight months to a year old.

Freedom from pests all the year round is probably the second greatest concern of the animal grower. We all have seen how flies worry a cow in the summer and we have thought what a help her tail was, but in the winter, animals are even worse off without our help, for their tails do little good against the winter pests. Summer and winter, animals should be free of pests, but the winter ones we are now concerned with are mites, lice, and cattle grubs. Almost all cattle are plagued with them during winter if protection is not provided. Lice live by sucking blood or by biting bits of skin and hair. The itching which results causes much discomfort and restlessness and you can often see animals scratching. Both the quality and quantity of their meat and milk production is decreased, milk production dropping as much as 15-20 percent. Vitality too, is lowered.

Lice begin their activity as soon as the weather begins getting cool, so that is the time control should begin. If treatment is delayed, large infestations result and the lice do not begin to die until warm weather comes.



**Beef Calves
in excellent winter condition**

Benzene hexachloride (BHC) or DDT is the recommended control, using amounts according to strength—3 pounds of wettable 12 percent gamma isomer BHC or 6 pounds of 6 percent gamma isomer BHC is required per 100 gallons of water for a spray mixture. DDT is used in the proportion of 25 pounds 50 percent wettable to 100 gallons of water, but must be applied in two applications 15 days apart. Lindane, which is refined BHC, should be used for milking dairy cattle because the odor of BHC will be absorbed by milk. 1.5 pounds of 25 percent lindane per 100 gallons of water is the recommended proportion, if tail lice are suspected, dip the whole tail in the spray mixture. A note of warning . . . do not use lindane on calves under three months of age and use dust instead of spray on young animals when the weather is cold.

Hogs too, need the farmer's help in lice control. Like the cattle lice, hog lice have the greatest activity in the winter months. Old crankcase oil will control them; the easiest method of application is to let the hog oil himself against a hog oiler. 1 pound of 50 percent wettable 1.5 percent DDT in 4 gallons of water to spray both hogs and hog houses is recommended more highly, however, thin the oil for a thorough control of badly infested hogs.

Cattle mange caused by mites which live on lymph instead of blood,

—Continued on Page 26

DOWN TO EARTH

By JOE O'CAIN



January...

*Turning To The
New Year*

The new world!
White and silent.
And innocent.

* *

Oh, Lord, give me a glory
And a workman's pride,
For you gotta get a glory
Or you're dead inside!

—Berton Braley

* *

O weary Earth, upon whose breast I sow
These seed, dear Nature's young so innocent,
Smile! Swell your sullen furrows cold below
And dwell triumphant neath God's firmament!

I wait. . . watch silently for each pale face
To smile upon your love-sucked breast serene.
I watch your soft green flowing gown of lace,
Each frill, each bow, each polkadot of green.

I wait. . . wait for a calm cool breath of spring
To bind my love with Nature's smiling young.
God! I wait for Thy mighty hand to cling
My pen and write the songs that Thou has sang!

—Joe O'Cain

January—snow flakes, gray-lace trees, new blood for thought! A clean sheet flips over.

What's up for '53? I wonder. The world will keep her stride, the city's smoke keeps edging into the countryside. . . The birds keep making big plans for a double sized family next spring, and the world lives on! There's lots of work to do, and I keep thinking

"If He called, I could not answer,
for life I have not lived."

(—O'Cain)

Sunshine and marbles!

And the little barefoot boy squats in his own original and sort of technical manner and knocks them all out of the ring again. The new "deferred" spring sun shines down like a full-grown sun in June, and cheers from a nearby political rally are heard.

And so another spring story begins—unlike the old stories. New conversation fills the air—conversation of the long-talked-of truce talks, political arguments, this and that. I wait and watch, admire, and declare "there's more work to be done." And. . .

JANUARY 1953

FACTS and FIGURES

By DON DUNLAP
Horticulture '54

Approximately 12 million acres of South Carolina land is devoted to forest crops which represents 60 percent of the total land area in the state. The annual cut of one billion board feet of sawtimber and approximately 1,200,000 cords of pulpwood and other forest products produced annually results in forest operations being the second largest source of income in the state.

* *

Four Clemson freshmen have just returned from Chicago where they attended the National 4-H Club Congress and the National Junior Livestock Show. Billy Joe Bales, James Riley Hill, Jr. and Charles Marshall received \$300 scholarships each at the 4-H Club Congress. John Henry Turner was one of the representatives to the National Junior Livestock Judging Contest from South Carolina.

* *

A demonstration carried on in Chester County showed that by irrigation 800 pounds of lint cotton was produced per acre as compared to 500 pounds per acre on land that was not irrigated. The Extension Service is promoting the use of irrigation on farms of South Carolina.

* *

Billions of people today get most of their food calories indirectly from corn and many million get most their calories directly from corn. The total contribution of the corn plant in feeding man is probably greater than that of any other cultivated plants on earth.

"Oh, you gotta get a glory
In the work you do;
A hallelujah chorus
In the heart of you.
Paint, or tell a story,
Sing, or shovel coal,
But you gotta get a glory,
Or the job lacks soul."

(—Berton Braley)

ELEVEN

HORTICULTURE *a great science*

By **BILL GARREN**
Horticulture '53

Your first reaction to horticulture might be and probably is, "What does that big word mean?" In this article the author will attempt to define it, not as a specific definition, for there are numerous and various descriptions, but rather by citing occurrences and "goings-on" in this field. In this manner the reader will better be able to draw his own conclusions and have some knowledge of horticultural science.

Probably the first horticultural plants to be recognized were berries, herbs, and some vegetables which were used as food by primitive man. It is thought that plants were cultivated 10,000 to 12,000 years ago and probably they were cultivated for food purposes. This means that horticulture had its beginning some 10,000 to 12,000 years ago.

From the primitive period we move into a period where horticulture was thought of in its terms of fruit growing. This particular period existed until the last of the nineteenth century. Next, vegetable growing was introduced as a branch of horticulture. Within the last thirty years ornamental horticulture has been gaining rapidly in prominence.

Now, that you have some background of horticulture, maybe you can see why it is so difficult to define. It is ever changing. Horticulture contains more variation in the field of knowledge than any other science. It has brought as much beauty to the world as has nature with her mountains and streams.

Our problem today is to keep our minds flexible, because this is a day when horticulture is still in the formative stage.

No longer is horticulture thought of only as the growing of flowers, fruits, vegetables, and ornamental trees and shrubs, but in its modern concept it has moved out of such restricted application and is now, in many in-

stances, an enterprise embracing large acreages of profitable and advantageous cultivation.

Horticulture is also a point of view; a field of thinking, of activity; of operation; a rallying point. This science acts as a liaison function or a connecting link between itself and other agricultural sciences.

In England, horticulture is a definite craft in itself and is not considered an agricultural department.

Horticultural plants are characterized by the fact that they are treated individually, are being grown intensively, and that their products are

HORT... Do You Know?

Horticultural plants are unique in their culture and characteristics . . . The sweet potato flower produced at Clemson is a doorway to progress; Clemson research brings a "Red Hot" pepper too hot to pick; Clemson peaches are known throughout the United States. Horticulture brings health and beauty to the world. Be sure to read Bill Garren's excellent article on Horticulture in this month's Agrarian.

—Editor

consumed and enjoyed immediately or shortly after harvesting. As such they are staple products and can be kept for a limited time or stored only with difficulty. These horticultural plants are divided into six groups: fruits (pomology), vegetables (olericulture), flowers (floriculture), bulbs (bulb growing), trees and shrubs (arboriculture) including both fruit trees and ornamentals, and seed growing.

Since horticultural plants are unique in their culture and characteristics, it might be appropriate to include in this article the interesting sidelines of experimentation and research in horticulture.

First of all, the sweet potato is, as you probably know, a very difficult plant on which to produce blooms. An optimum condition is necessary if blossoms are to be expected in the field. Many people are unfamiliar with the sweet potato flower—further evidence of its rarity. Furthermore, most sweet potato growers are not interested in the sex life of the plant because the flowers do not put money in their pockets. However, here at Clemson the flower is our doorway to progress. One entire greenhouse is devoted to the production of sweet potato blossoms so that new and improved varieties may be available to us, the public. In order to carry on such a research and breeding program, it is necessary to have a source of material; so a cooperative program was organized as a means for the breeder to obtain sweet potatoes from other states as well as foreign countries. Expeditions from many colleges and universities have been sent to foreign countries to look for and bring back sweet potatoes which have desirable characteristics.

The sweet potato on your plate when you sit down to a hot meal is most likely the Porto Rico variety. Why? Because this is the type of potato that the public demands and the type that the research workers are trying to improve. There are many vexing problems facing the sweet potato breeder. Outstanding among these is the never ending search for a plant that is wilt resistant. Other problems include producing a root that will bake, yield, and sprout well. The Porto Rico comes closest to all these characteristics, but there is still room for improvement.

Sesame is "for the birds"! That is, it was for the birds until it was discovered that the seed of this plant contained approximately fifty percent

—Continued on Page 27

SOIL CONDITIONERS

Natural soil conditioners has long been known to the agricultural man, however, synthetic soil conditioners have been discovered. This article has been written with the hope of clearing up some of the misconceptions about soil conditioners and their relation to the soil. It should be clearly understood that the soil conditioners are not miracle drugs that improves soil structure as if by magic.

To the average college student, the soil is a solid and is made up of small particles, and this is about as far as his knowledge goes in this field. However, let us all remember that the stuff we walk around on during our lifetimes is very complex and dynamic in nature.

The term "texture", which is so often confused with structure, is used to mean the size of the particles or the make-up of the soil from the standpoint of the percentage of the different-sized particles. Structure is a term used to indicate arrangement of the particles, or the condition of the soil with respect to the aggregation or granulation of the soil particles.

Sand, of course, has a single grain structure, but this is not objectionable or detrimental in the coarser soils. In the finer soils such as clays, single-grain structure is very objectionable or undesirable because the pores in the soil are so very small, therefore such soils are often very poorly drained. Also detrimental gases cannot escape nor can oxygen get in which would result in death to the plant roots. This condition becomes even worse due to the fact that anaerobic bacteria begin working on the nitrates and other compounds, and converting them to the elemental state. All these conditions can be brought on to some extent by poor soil structure. Therefore, good soil structure is of great

importance as far as crop production is concerned.

The desirable condition in a heavy soil, such as there are in some areas of the piedmont of South Carolina, is that of a "crumb" structure or granular condition. This condition is brought about by nature to some extent in soils sufficiently supplied with organic and mineral colloidal matter.

Organic matter is added to the soil in a number of ways. The soil organisms, micro and macro, attack this organic matter in the soil in order to obtain energy and nutrients for satisfying their own needs for growth and reproduction. In this process the organic matter is finally reduced to a brown or blackish substance called humus. Humus is colloidal in nature and possesses an exchange capacity. Besides this, humus along with

PHILIP D. DUKES
Agronomy '53

partially decomposed organic matter is able to hold the particles of soil together in such a way as to cause granules or aggregates to be formed; this results in a desirable soil structure. Therefore, organic matter and its decomposed components are natural soil conditioners.

In December 1951, Monsanto Chemical Company announced that its research had successfully developed a series of synthetic resin soil conditioners, among them a hydrolyzed polyacrylonitrile and other experimental polyelectrolytes. These compounds in preliminary experiments showed spectacular power to improve the physical condition of high clay content soils. Early development work showed that these soil conditioners would be uniquely valuable in agriculture, especially in horticulture and erosion control. Therefore, Monsanto expanded its facilities for commercial production

of these soil conditioners. These commercial products were put on the market under the trade name of Krilium.*

Krilium resin is a synthetic compound replacement for the natural polysaccharides or polyuronide resins derived from the soil humus. The manufacturer of Krilium indicates that this soil conditioner retains its aggregating power against decomposition by soil microorganisms in some cases at least 10 times as long as the natural crude organic matter. Also, it requires from 50 to 100 tons of manures or other residues to produce one ton of polyuronides. These natural soil binding gums, however, are themselves rapidly decomposed by soil bacteria, making it necessary to maintain adequate gum-producing humus by constantly adding large quantities of organic matter to maintain the structure of the soil. As a measure of structure improving power, one pound of this soil conditioner is equivalent to the natural gums produced by 100 to 1000 pounds of manures or plant residues.

THE HOME GARDENER was quick to recognize the possibilities of such a product. This created a great demand for these products, even before the manufacturers could meet the demand. As a result of the great demand, many companies developed similar products in order to capitalize on the good market.

J. P. Livingston and I have conducted some experiments using four of the piedmont soil series, with various applications of three soil conditioners. Results are not complete as yet, however, the time of emergence of rye seedlings on soils treated with these conditioners was of interest. The rye plants in the treated soils emerged earlier than in the non-treated soils. Also, there was a definite improve-

*Krilium—Trademark of Monsanto



AGRICULTURAL CLUBS

There are, in the Clemson College School of Agriculture, two honorary clubs and seven professional clubs. Alpha Zeta, one of the honorary clubs, is the only agricultural organization on the campus which is open to members of every department of the School of Agriculture. The other honorary club, Alpha Tau Alpha, is open only to vocational agriculture majors.

ALPHA ZETA

Alpha Zeta is a national organization which proposes to "promote the profession of agriculture; to establish, foster, and develop high standards of scholarship, character, leadership, and a spirit of fellowship among all its members; to create and bond together a body of outstanding technical men who by scholarly attainment, a faithful service, and maintenance of ethical ideals and principles have achieved distinction and are capable of honoring achievement in others; to strive for breadth of vision, unity of action and accomplishment of ideals; to commend all worthy deeds, and if fraternal welfare demands, to counsel with its members."

Alpha Zeta members are selected from agricultural students "of high scholarship on the basis of character, leadership, and personality." This year fifteen new members were admitted. The officers for the current year are J. P. Fulmer, Chancellor; P. L. McCall, Jr., Scribe; J. B. Stanley, Treasurer; J. D. Early, Censor; J. A. Graham, Chronicler.

This organization, at the present time, is sponsoring the publication of the Agrarian.

FOURTEEN



(Officers of Future Farmers of America, one of the nine Agricultural clubs at Clemson)

Officers—From left to right—J. B. Monroe, Advisor; F. E. Shelly, Reporter; J. D. Beam, Vice President; J. E. Coggins, President; F. G. Best, Secretary; and L. D. Coleman, Treasurer.

PROFESSIONAL CLUBS

Each of the seven professional clubs is sponsored by one of the major departments of the School of Agriculture. The professional organizations include the American Society of Agricultural Engineers, the Block and Bridle Club, the Clemson 4-H Club, the Dairy Club, the Future Farmers of America, the Junior American Society of Horticultural Science, and Kappa Alpha Sigma.

ASAE

The Clemson Student Branch of the American Society of Agricultural Engineers is an organization of students majoring in Agricultural Engineering. Its purpose is to bring the students closer together and to promote their interests in professional advancement in the agricultural engineering field. It encourages work and fellowship among the members and better relations with the faculty and department workers through projects, field trips, and social activities.

Our student branch is growing rapidly along with the Agricultural Engineering Department. Sixty-two members are presently enrolled in

—Continued on Page 23

INITIATION OF NEW MEMBERS

The fraternity of Alpha Tau Alpha has had several meetings this year during which time the new members have been accepted, and initiated and plans laid for the work and activities of the chapter. The officers of A. T. A. were selected at the last meeting of the fraternity last year as follows: President, Ronald M. North, Stockton, Ga.; Vice-President, Edward D. Howey, Fort Mill; Secretary, Raymond L. Kelly, Forest City, N. C.; Treasurer, Gene A. Norris, Conway; and Reporter, James G. Flanagan, Clover. New members who were taken into ATA are Norman E. McGlohon, Laurens;; Herbert R. Corbett, St. Matthews; Clyde C. Lucas, Gascon; Clarence K. Palmer, Seneca; and David W. Howe, Hickory Grove.

The chapter has already begun work on some of the projects which we plan to complete this year. The major project is the building of a scroll on which all of the past ATA members will be listed by name and number and grouped according to the year they graduated. We also plan to construct an electrically lighted emblem to be used in initiations and meetings. On the lighter side of the fraternities activities, we will have a banquet near the end of the first semester.

THE AGRARIAN

Value of Collegiate FFA

The Agricultural Education faculty and students feel that a Collegiate F. F. A. Chapter is very essential to the training of agriculture teachers. The chapter operates under a carefully prepared constitution and by-laws. Officers of the chapter are elected twice a year in order to give more individuals leadership training. Meetings are held regularly on the second and fourth Tuesday nights of each month. As a part of the recreation provided by the chapter, a fish fry is staged in the Fall and a camping trip in the Spring quarter for all members and guests.

Learning how to conduct and participate in these recreational activities will greatly benefit the student who is to become a local chapter advisor. It also increases the opportunities for leadership experience, helps members to become better acquainted, and promotes a better understanding between students and teachers.

The Collegiate F. F. A. Chapter is invaluable to students in Agricultural Education because it provides a chance to develop leadership, character, and fosters friendly relationships among the members and helps them to grow socially into better,

more complete individuals. This training may not have been otherwise received, and it is training that a vocational agricultural teacher cannot afford to be without. The knowledge gained from serving as an officer or on various committees should prove very beneficial in setting up, organizing, and advising an F. F. A. chapter when the student becomes a local advisor.

There are some students enrolled each year in Agricultural Education who have not had vocational agriculture in high school or any F. F. A. experience. The Collegiate Chapter affords these students many of the experiences which they have missed in F. F. A. work. The Collegiate F. F. A. is also a means of keeping chapter members informed of the activities of the State and National F. F. A. Associations and of any changes which may occur in these organizations.

The prospective teacher of Agriculture who takes an active part in the Collegiate F. F. A. Chapter will feel more at ease, have more confidence, and will be better fitted for the job as advisor to the local chapter in which he becomes the teacher of Vocational Agriculture.

portant than the breed purchased. This is true whether the chicks are being purchased for layers or broilers. Many farmers are buying a broiler strain of chicks to be used as layers and vice-versa. This mistake alone is enough to be responsible for one being dissatisfied with his farm flock. No breeder has yet bred and proven that he has combined outstanding egg production and outstanding broiler qualities in the same strain of chickens. Some breeders are breeding for this, but they have a very difficult problem ahead of them.

There are also broiler tests which furnish official reports of the results with broiler strains. These tests are as important to the testing of broiler strains as are the test for egg-producing strains. Buy for a purpose.

Horticultural Club

The Horticultural Club is the professional club for all students interested in landscaping, ornamentals (shrubs, flowers, and flowering trees), vegetables, fruits, and food preservation. The Horticultural Club is the intermediary in which its members are able to meet outstanding leaders in horticulture and to keep up with new developments in horticulture by the use of films.

The club of the Horticulture Department is one of the oldest clubs on the campus. The club was organized in 1925 by the late Professor C. C. Newman who at the time was head of the Horticulture Department.

The purpose of the Horticultural Club is to stimulate interest in the field of horticulture, to keep its members informed on the newer developments in the ever increasing field of horticulture, and to provide an opportunity for its members to meet with experienced horticulturists who are qualified to give first hand information on problems that confront a beginner in the horticultural profession.

Newly elected officers include the following persons: J. P. Fulmer, president; W. R. Garren, vice-president; R. H. Donaldson, secretary; C. E. Atkins, reporter.

The faculty advisors are T. L. Senn and F. W. Thode.

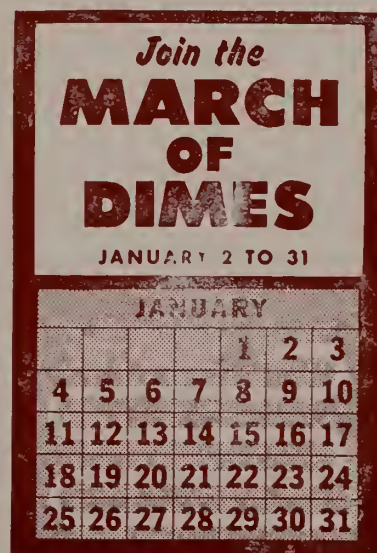
Yardsticks of the Chicken As an Egg Factory

Continued from Page 9—

the most significant award to win in the standard tests. The ten highest based on breeders eligible for this award is published in the November issue of Poultry Tribune. The winner of this award in 1951-52 entered 65 White Leghorns in the standard tests. The record of these hens was 263 eggs per pullet entered and a livability of 92.3 percent.

In selecting the breeder or hatchery from which a farmer or commercial poultryman should buy his chicks, it should always be remembered that the strain of chicks that are purchased is much more im-

JANUARY 1953



FIFTEEN



Agronomy Students At Convention

Five agronomy students attended the convention of the American Society of Agronomy which was held in the Netherland Plaza Hotel in Cincinnati, Ohio from November 17-21. The students that attended were: A. D. Boggs a senior from Seneca; D. N. Chamblee a junior from Anderson; P. D. Dukes a senior from Reevesville; L. C. Lawson a senior from Darlington; and P. L. McCall Jr. a senior from Hartsville.

The students were accompanied by Dr. C. M. Jones and professor B. M. Ritter of the Clemson Agronomy Department. The party left Clemson for Cincinnati on Sunday November 16th, and arrived in Cincinnati in time for the meetings which began at one o'clock on Monday, November 17th.

Laurie Lawson, president of the Clemson Chapter of the Student Activities Section, and Philip Dukes secretary were the two delegates to the student meetings. Each chapter was permitted to have two voting delegates. The other three students, Alan Boggs, Neil Chamblee and Peter McCall attended some of the student meetings, and also some of the meetings of the Parent society which were held simultaneously.

The party left Cincinnati late Thursday afternoon after the meetings and drove back to Lexington, Ky., where they spent the night. The next morning they continued their journey toward home. About ten o'clock it began snowing, and continued all day. Late in the afternoon after traveling from ten o'clock to six o'clock and traversing only approximately sixty miles across the state of Kentucky, they decided it was impossible to proceed any fur-

—Continued on Page 26



Shown above are four of the five agronomy students that attended the convention of the American Society of Agronomy which was held in the Netherland Plaza Hotel in Cincinnati, Ohio from Nov. 17-21. They are from left to right Neil Chamblee, Alan Boggs, Laurie Lawson, and Peter McCall Jr. (Photo by Philip Dukes)

DR. PADEN RECEIVES HONOR

Dr. William Reynolds Paden, Agronomist of the South Carolina Experiment Station at Clemson College, was elected a Fellow of the American Society of Agronomy at its annual meeting held in November in Cincinnati. This signal honor bestowed on Dr. Paden by the Society is in recognition of his outstanding service and technical contributions in the field of agronomic research.

Dr. Paden, a native of Missouri, was graduated from the University of Missouri and received the M. S. and Ph. D. degrees from the University of Illinois. He has been with the South Carolina Experiment Station since 1929.

Dr. Paden's research contributions have been in the field of soil chemistry, soil fertility, and crop production. He has given special considera-

tion to the relative efficiency of different forms of nitrogen and the effects of the application of minor nutrients to different soils in crop production. Other contributions of his include research on the intensity of removal of cations from soils and plant tissue by electrodialysis, the relation of the cation saturation of soils to yield and composition of crops, and the effects of various rates of application of calcium arsenate to different soils on the yields of certain crops.

He has served on numerous committees of the American Society of Agronomy and the Soil Science of America. He has also been very active in the Southern Section of the American Society of Agronomy and has taken a leading part in practically every phase of the activities of the southern agronomists.

FURROWS



Pictured above are four of the prominent men who took part in the S. C. Dairy Association meeting at Clemson College. From left to right are: C. G. Cushman, leader of Dairy Extension work in South Carolina; M. E. Woolen, 1952 President of SCDA; Mr. Goodale, professor of dairying at Clemson, and Dr. Samuel Brody, professor of Dairy Husbandry at the University of Missouri, who was one of the main speakers.

S. C. Dairy Association Meets

Clemson College was honored to be the host of the eighth annual meeting of the South Carolina Dairy Association.

The association opened its convention by their registration in the Clemson House. After registration the delegates were divided into groups according to the field of work in which they were most interested. Here they discussed detailed problems which face dairymen.

M. E. Woolen presided over the business meeting which was held on Wednesday morning. The convention really got under way with the keynote address by C. R. Schoby, president of the American Dairy Association. He was followed by Dr. Samuel Brody, who discussed climate, dairy industry, and milk products.

To put the finishing touch to a wonderful convention, the annual banquet was held in the Saber Room of the Clemson House at 7:00 P. M. The group was extremely fortunate to have Professor J. D. Lane as toastmaster and Col. Jack Major, of Paducah, Kentucky, as the main speaker.

FACTS ABOUT KAPPA ALPHA

Kappa Alpha Sigma, the Clemson Chapter of the Student Section of the American Society of Agronomy, was established at Clemson in 1937. Kappa Alpha Sigma is more commonly known on the campus as the Agronomy Club or "The Lords Boys."

Since the club was established in 1937, it has been active some years and rather inactive other years. During the past two years, however, it has become one of the largest and most active professional clubs in the School of Agriculture.

The club now boasts of twenty-two active members, most of whom are juniors and seniors majoring in Agronomy. (The members are: R. L.

Ashley, Jr., a senior from Honea Path; J. P. Bailes, a junior from Union; A. D. Boggs, a senior from Seneca; D. N. Chamblee, a junior from Anderson; P. D. Dukes, a senior from Reevesville; J. B. Elliot, a senior from Nichols; J. P. Flavin, a senior from Deland, Fla.; J. A. Graham, a senior from Scranton; C. R. Grainger, a senior from Nichols; G. R. Griffin, a junior from Leesville; M. D. Hawkins, a sophomore from Hartsville; J. L. Heyers, a junior from Butler, Pa.; J. E. Heirs, a senior from Ehrhardt; L. C. Lawson, a senior from Darlington; J. P. Livingston, a senior from Springfield.

Also P. L. McCall, Jr., a senior from Hartsville; T. L. Maxwell, a

junior from Hartsville; A. D. Owens, a junior from Greer; R. E. Poston, a junior from Hyman; C. F. Sease, a sophomore from Ehrhardt; R. L. Squires, a junior from Aynor; and H. B. Stoudemire, a senior from Elloree.)

The present officers of the club are Laurie C. Lawson, President; Harry B. Stoudemire, Vice-president; Philip D. Dukes, Secretary; and James E. Heirs, Treasurer. R. Grainger is chairman of the Refreshment committee, and R. E. Poston is Chairman of the Program committee.

Work In 24,000 Acre Forest

Pre-Forestry at Clemson Gives Excellent Experience

HARLON E. JOYE
Pre-forestry

Although it doesn't have a four year course in forestry, Clemson College does offer its students a pre-forestry course which is exceptionally good because of the amount of practical experience which the student obtains. Clemson can well offer this practical experience, for it contains, in the immediate vicinity of the campus, approximately 24,000 acres of forest lands on which to put in practice the knowledge gained in the classroom.

Besides the fundamental courses in English, algebra, trigonometry, surveying, chemistry, economics, engineering drawing, physics, zoology, botany, and geology. Clemson also offers the individual taking pre-forestry two courses which pertain directly to forestry.

The first, a course in general forestry, is studied during the first semester of the sophomore year. This course gives the forestry student a preliminary glimpse of the subjects which he is to study during his junior and senior years of college. This study acquaints him with the fundamentals of identifying trees, of re-foresting both cleared and wooded area, of defending the forest against fire, insects, and fungus pests, of measuring the forest crop, of harvesting this crop, and of making forest products durable and adaptable. It also describes the forestry practices of the state, the communities, and the private owners. The course also thoroughly discusses the nation's forest policy.

The forestry student gains a great deal of practical experience in the weekly laboratory period, which consists primarily of field work. In this lab, the student learns to apply the fundamentals which he learned in the classroom in identifying trees by their

twigs in the winter and their leaves in the summer, in harvesting trees by the correct method, in obtaining the number of cubic feet of merchantable timber, in identifying fungi, and in performing many of the duties of a forester.

The second forestry course is dendrology, a study of the identification and distribution of trees. This course, taught during the second semester of the same year, is exceptionally good at Clemson, for this school, being located in the Centrals Hardwoods Region, just south of the Northern Forest Region, which runs parallel to the Appalachian Mountains, and just north of the Southern Forest Region,

NOTE TO BIRD FANCIERS

The Carolina Bird Club is an incorporated association for the study and conservation of wildlife, particularly birds, in the Carolinas. In addition to publishing its quarterly magazine, "The Chat," the club also; (1) holds an annual spring business meeting and a fall dinner meeting (2) conducts club-wide trips to places of ornithological interest, (3) sponsors Christmas and spring bird censuses by local groups (4) encourages original research and publication (5) aids in the establishment of local clubs and sanctuaries, (6) takes an active interest in conservation legislation (7) co-operates with state and federal agencies, and (8) furnishes information and speakers to interested groups whenever possible.

Anyone interested in becoming a member of this club or organizing a club under the auspices of this organization should write Buren Whitener, 130 Woodburn Road, Raleigh, N. C.

has on or near its campus an infinite variety of tree species. Besides the large number of trees growing in their natural habitat, Clemson also has on its campus a great number of different ornamental trees. This great variety of trees gives the student an invaluable opportunity to study many different kinds of trees and thereby gain a broader knowledge of the distinguishing characteristics of the different species.

In addition to the practical experience which they obtain during the laboratory periods, some of the pre-forestry students have an opportunity to work for the college during the summer on a timber cruise.* Since the students will have to do a great deal of timber cruising during the forestry summer camp, which they will attend between their junior and senior years at some other school, this work is a great aid to them. The work gives the students a chance to put into practice the knowledge gained in surveying, dendrology, and general forestry. They also learn to read aerial photography maps and to use the information obtained from these maps. Above all, the future foresters learn one important thing, that they must have a keen observation and must use this trait at all times. If they don't they find that they miss many important details.

The student has still another chance to gain experience, for each year a student is placed in charge of the forestry nursery. This individual learns a great deal about the germination of tree seeds, the care of tree seedlings, the transplanting of seedlings, and the delicateness of young seedlings.

When the student finishes his two years at Clemson, he has an excellent

—Continued on Page 26

THE AGRARIAN



AGRARIAN PHILOSOPHY

By
THE EDITORS



WHAT CAN THE FARMER LOOK FOR IN 1953?

By WILLIAM F. STEWART, Jr., Co-Editor

Few people, other than farmers, really know the condition under which the average farmer operates. Since diversification has been started in the Southeast, these conditions have lessened somewhat. However, I still contend that the farmer must take more for granted than any other businessman. When the farmer seeds his crops, he has absolutely no assurance that he will be able to meet the debts that are incurred in producing a crop. Without fail, however the southern farmer will set to his task diligently with a trust in God and his fellow man.

The American people have now selected a new President to guide their fortunes for the next four years. This means a more or less complete changeover in Washington. The past election demonstrated that the American people want more voice in their future. For the most part the so-called machine-backed candidates were defeated, and this alone demonstrates that the farmer is going to command respect in the future.

During the year just closed, most wages and prices in industry advanced another notch. However, when the farmer gathered his products and carried them to the market, he found that the prices were generally lower. The cotton and tobacco farmers found that they had less money to put in their pockets; yet, their production costs were at an all time high. The hog farmer found that the hog-corn ration was such that he could only make expenses. The dairy and beef farmers had been slapped in the face by the summer drought. This has all added up to a rather bad year in general for farmers in the South. The farmer can not quit, however, because he is involved in a permanent business. His heart, soul, and most of his finances are tied to his business.

With the migration of many new industries from the New England States to the Southeast, the farmer finds himself confronted with serious labor problems. The farmer can not pay wages that are on the same scale with industries, but our nation and many foreign nations must be fed from the soils of our great nation. This is going to call

—Continued on Page 29

THE NEW AGRARIAN

RONALD M. NORTH, Co-Editor

This is the new year when everyone is making a voluminous list of the traditional New Year's resolution, some to be followed in earnest, but the great majority to be quickly forgotten in the hustle and confusion of everyday life. In this particular issue of THE AGRARIAN we have printed an anonymous collection of what we think would be a worthwhile group of resolutions for any progressive farm family or individual to adopt and live up to in earnest every day of every year. It is not through the force of tradition, but out of necessity for the protection of THE AGRARIAN and all who are concerned with the publication that we have made a few commitments which are in effect new to us. We believe that a new system of management of THE AGRARIAN will have a more binding and businesslike nature than at any previous time in its history, and at the same time be of more value to Clemson and South Carolina.

In brief we would like to familiarize everyone with the new organizational set up of THE AGRARIAN. To begin with, it was revived at the beginning of this school year by a group of agricultural students and professors interested in the future of agriculture in the South and fully aware of its supreme importance in the welfare of the nation.

THE AGRARIAN was founded in 1938 by Mr. Ben E. Goodale, at present a Professor in the Dairy Department at Clemson, and Mr. Bo Williams, Head of the Sociology Department at the University of Georgia. The student founder was H. L. Beech, a vocational agricultural education major of the class of 1939. Since that time THE AGRARIAN has had many up and downs in the efforts of various individuals to keep its prestige as the oldest and most interesting technical publication on the campus. In view of the facts behind the apparently weak cycles in the magazine's life, it was concluded that the major necessity for a good magazine was that it have a permanent and fool-proof organization, especially in regard to its finances.

It was with this thought in mind that THE AGRARIAN was reactivated under the sponsorship of The Fraternity of Alpha Zeta. Alpha Zeta will be responsible for the premanency as well as the yearly operation of the magazine. When confronted with the problem, Alpha Zeta promptly

—Continued on Page 20

THE NEW AGRARIAN—

Continued from Page 19—

realized the importance of the project and immediately brought the situation to the attention of the fraternity. The possibilities and responsibilities of this as a project were discussed freely and openly in the Alpha Zeta meeting and after much deliberation, questioning, arguing, and presentation of many solutions, a satisfactory agreement was reached.

The final solution, in its most important aspect, is that this magazine will be operated by the students in the School of Agriculture, and that all finances are to be handled by the students with the approval of the faculty advisors and the college business manager. Specifically, all business matters must have their sanction, and all transactions will be made in triplicate—one copy will go to the business manager's office, one to the treasurer's office, and the other to THE AGRARIAN files.

As far as the student organization is concerned the following procedures will be followed in selecting the staff. The staff will be headed by two co-editors who will work together to publish an acceptable magazine. One of these Co-editors will be a junior from the Fraternity of Alpha Zeta and the other will be a senior from the School of Agriculture. The junior co-editor will become responsible for the continuity from one year to the next by automatically becoming the student advisor during his senior year. In this way, at least one member of the staff will have some experience in working with this kind of publication.

THE AGRARIAN'S business manager will also be a member of The Fraternity of Alpha Zeta whereby the business responsibility shall be in the hands of the organization which is ultimately responsible for its success.

The faculty advisor for THE AGRARIAN will be the chairman of the Alpha Zeta advisory committee. The officers which have been mentioned above can hold office for only one year, with the exception of the faculty advisor.

The remainder of the staff is to be selected from the students in the School of Agriculture based upon their interest in the magazine and also in a particular phase of journalism. To do this, a mass meeting of the interested students will be held to determine their preferences and to consider the various problems which arise from time to time.

We believe that this system of organization for a publication of the nature of THE AGRARIAN will work successfully for the benefit of Clemson, the students, and the state of South Carolina as a whole. However there are certain loopholes which have possibly been overlooked, and THE AGRARIAN welcomes any suggestions which you feel would help to make it a better publication.

TWENTY

INAUGURATION

*You Have Elected
Us To Serve You*



WE PLEDGE
A SQUARE DEAL

At

ESQUIRE

SHOPS FOR MEN

Clemson — Greenville

BROWN FERTILIZER COMPANY

Blackville, South Carolina



Barnwell and Bamberg counties only
completely equipped fertilizer manu-
facturers.

THE AGRARIAN

V. A. E'er WRITES FARM COLUMN FOR HOME TOWN NEWSPAPER

Joe O'Cain, Agrarian Associate
Editor, Creates Behind the Barn;
Writes Book

The smell of tractor smoke, the sweet scent from the farmer's wife's kitchen, and hints and suggestions on this and that on the country scene highlight the bi-monthly "Country Things, This and That" column in Orangeburg Times and Democrat. It's something new in the way of farm journalism, jacked-up behind the usual farm scenes. It all started from a search of "little country things" that needed to be brought into the light.

Joe O'Cain, the Agrarian's associate editor and junior vocational agricultural education major from Orangeburg, is the author of this column. He also writes another column for the paper and has a collection of original poems. Also unique in its plan is a book being written by O'Cain entitled "The Clemson Story." No information on this project has been released, however, the book will be the product of four years' work.

WILLIS ELECTED NATIONAL SECRETARY

James K. Willis, former Clemson student, left school last month to become South Carolina's first national officer of the Future Farmers of America. The 20-year-old youth of McColl was elected national student secretary of the Future Farmers of America at the National FFA convention, held in Kansas City, Missouri.

Willis is not exactly a stranger to National F. F. A. conventions, the last one having been his fifth trip to Kansas City with the S. C. delegation. He attended his first national convention as a federation representative, and the past four years he has been a state representative. Year before last he was chairman of the national nominating committee.

He was a member of the program of work committee last year at the national convention and received his American Farmer degree at that

FISH STOCK NOW AVAILABLE

Anyone interested in stocking his fish pond in the spring of 1953 should get his order in now. These orders are filled in chronological order so the early orders will get first consideration. Interested persons should contact their County Agent, Soil Conservation Man, or Local Game Warden for order blanks and information.

Stocks of Blue Gill Bream (Brim) and Large Mouth Bass are available.

Lespedeza bicolor should be ordered for late winter or early spring planting. Stocks of forest pine seedlings are available. See your County Agent or write the Forest Commission, Columbia, S. C. concerning seedlings.

"Truth crushed to earth shall rise again."

* *

"Be true to the best you know."

CLEMSON ATA'er ATTENDS MEET IN KANSAS CITY

The Kappa chapter of Alpha Tau Alpha sent Ronald M. North as its delegate to the national conclave which was held in Kansas City, Missouri in October. The trip to Kansas City was really an enjoyable as well as an educational experience. Each chapter gave an annual progress report at the second session. This seemed to be the most important aspect of the entire conclave. As each chapter presented its report the other chapters had a chance to learn a first hand account of the activities and ideas which prevail in the other colleges throughout the nation.

In addition to the activities pertinent to ATA, the delegates attended some of the National FFA activities such as public speaking, band, chorus, and others. Ronald served on the program of work committee for the national program of work.

STATE GAME WARDEN CLINIC AT CLEMSON

One of the first moves of the new South Carolina Wildlife Resources Commission, whose aim is to improve wildlife conditions in the state, was the holding of a clinic for state game wardens.

This five-day clinic, held at Clemson College, began August 4. This warden group learned from many real authorities on the important subjects presented at the clinic, just what the commission will expect of them.

A written examination was required after these men had met many periods of instruction. This examination determined the ability of each man to fill his respective job.

One of the most outstanding projects which developed as a result of the clinic was the adoption of a more uniform and standard type of game warden service. Discussed at the clinic was the need of the same type of law enforcement the state over, the same approach to the job, the same understanding of what the law means and the same version of what the commission wants.

GUILTY or NOT GUILTY

By JIMMY YOUNG

125,000 ACRES BURN ANNUALLY

You are guilty! Yes, you and I are guilty of burning over some 125,000 acres yearly of valuable forest in South Carolina alone. This unprofitable carelessness has resulted with a great loss to the owners of these bountiful forests, a loss in economy to our state as well as to our country, losses in organic material of soils, losses in wildlife and recreation, and even loss of human lives and domestic animals.

With these facts in mind, it is somewhat appalling to think that after twenty-five years of fire prevention education activities in South Carolina and with the increasing demand for lumber and other products derived from the forest we can still expect more than 5,000 forest fires will start this year. Already there has been an unofficial report of nearly 5,000 acres of burned forests in South Carolina. What are we going to do about it?

The combined efforts of all agencies in the field of conservation and natural resources are needed to greatly reduce the occurrence of forest fires caused by carelessness. You and I are responsible for reducing the occurrence of these unnecessary fires. Such efforts on our part are basic for an intensified program of forest management.

Many of us have never been exposed to the surprisingly amazing facts of what happens to our wildlife as a result of forest fires. We do not know, and many of us are unconcerned and do not care to know, the extent to which forest fires kill and injure wildlife.

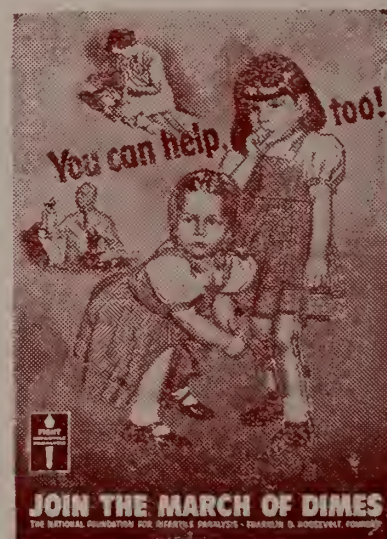
Most of our forest fires occur in the winter and early spring when the grasses and shrubs are dead, and the forests are dry. This is fortunate but even so the fires take a great toll of our adult wildlife, who must reproduce their species.

Many species of game, both large and small, are killed outright or badly injured in woods fires. The helpless animals become frightened and confused by these ugly, destructive flames, and dash through the raging fires only to be burned to death.

The members of the State Commission of Forestry are concerned with assistance to landowners of the state in the protection, development and management of their forest lands, and in the harvesting and utilization of forest products. Foresters have readily recognized the potentialities of co-ordinating a program to benefit our rapidly decreasing number of game in connection with forest land management. A co-ordinated program of furnishing food and cover for game in connection with forest land management is very essential to the conservation of wildlife.

It is a recognized fact that well managed forest cover approaches the ideal in soil and water conservation. The proper protection and wise management of our woodlands should be of vital concern to us if we are to

replace the fertility of our once virgin soil and reproduce our forest which previously supplied man with an abundance of wildlife, natural resources, and recreation. We fortunate Americans can and must restore, protect, and maintain our forest and woodlands as well as our wildlife, with our sincere, maximum ability!



TRIED and TRUE

Broadleaved Evergreens — Fruits
Ornamentals of Every Description



P. O. Box 910 - Augusta, Ga.

The Agrarian Presents:

DR. WHITNEY—

Continued from Page 6—

bad, no vacancies were to be had at Clemson, or anywhere nearby. The pre-fabs were being built but were not yet finished. Dr. Whitney took one. At least he had four walls and a roof, even if it did not have plumbing and running water. At least this was better than an army tent. Before long, a house was provided by the college. When the Whitneys moved in with their two children and pets it soon became a home.

Besides teaching freshman botany and senior plant physiology, Dr. Whitney has been connected with research at Clemson. For two summers he and Mr. Salley of the Chemistry Department have worked with *Eremothecium ashbyii*, the fungus organism which produces riboflavin or vitamin B. If this organism could be produced in abundance and cheaply, it would mean a great saving to feed companies. Purina Feeds alone buy four million dollars worth of riboflavin per year. Dr. Whitney and Mr. Salley estimate the cost of their method at around 4 dollars per pound instead of 20 dollars per pound as it now is. Their research dealt with finding a strain of this organism which would produce riboflavin in greater quantities and then finding its nutritional requirement for growth.

There was also the problem of isolating the riboflavin product from the culture medium. This was done too, and they came out with riboflavin, unconcentrated, but sufficient for hog, dog, and poultry feed.

The honorary fraternities and botanical societies to which Dr. Whitney belongs are: Alpha Zeta, S. C. Academy of Science, Sigma Xi, Phi Kappa Phi, American Association for Advancement of Science, Botanical Society of America, and the American Society of Plant Physiologists.

At home Dr. Whitney enjoyed his garden until a road was built right through the middle of it. Now when he comes home on holidays from Oak Ridge, he does not have time for a garden anyway, but he does enjoy being with Mrs. Whitney, the three little boys, and a big collie dog.

So this is the interesting life of John Barry Whitney, Professor of Botany and Plant Physiology at Clemson College.

ASAE—

Continued from Page 14—

the club, with eighteen joining during the fall semester. L. F. Denaro of Moncks Corner, S. C., is president of the local branch. Other officers are S. A. Nunnery, Vice-president; C. F. Abercrombie, Secretary and Treasurer; and C. J. Walters, Reporter. Prof. Parker Young is the faculty advisor this year.

Club News (Con't.)—

FFA AND ATA HAVE JOINT MEETING

The F. F. A. and A. T. A. held a joint meeting on Thursday night, November 29, 1952 for the purpose of hearing Mr. R. E. Naugher, federal agent for Vocational Agricultural Education. Mr. Naugher started out as an agricultural teacher in Loris, S. C. and a few years later, he was appointed District Superintendent of the Pee Dee Area. Due to his outstanding work in this field, he became recognized by high state officials and was appointed to serve in the Office of Education in Washington, D. C.

This visit by Mr. Naugher marked the first time for a federal agent to visit the Agricultural Education Department in 16 years. He also visited some of the Agricultural Education classes and was introduced to some of the work carried out in practice teaching schools in the surrounding community.

NEW MEMBERS IN FFA

New members are initiated into the club each semester as greenhands. Prospective members are required to enroll in Vocational Agricultural Education. Informal initiations are carried on for a week, and a formal initiation is held at one of the regular meetings for all the prospective members. After the formal initiation, the new members become active for the duration of their college career.

Sixteen new members were initiated this semester. They were C. C. Lucas, R. L. Kelly, C. D. McLaurin, R. M. Cox, F. H. Garner, C. L. Mulwee, D. B. Lewis, N. A. Myers, R. D. Burns, F. R. Meech, E. M. Holden, W. W. Weldon, G. W. Sawyer, C. T. Odom, R. C. Brown, and T. M. McMillan.

Old Farmer Brown was being congratulated on the fine crops that he made. "Yes, but it's mighty trying on the soil," he said.

* *

Be wiser than other people if you can, but do not tell them so.

—Earl Chesterfield

TWENTY-THREE

What it takes
NACO's
got!

if you know
SEABIRD
you know
NACO

FERTILIZERS
that build
better crops

INSECTICIDES
that assure
crop protection

NACO

CHARLESTON, S. C.
SPARTANBURG, S. C.

Research In Wildlife

The preliminary work for the project now under way ended June 30, 1952. This work had been going on for 22 months. During this time 10,000 acres of college land was posted against hunting; cover maps were made; 20 miles of woods roads were opened; six bridges were built to accommodate heavy land working equipment; 130 quarter acre Lespedeza bicolor plots were installed adjacent to woodland or brush cover; and 100 acres of permanent or semi-permanent food patches, ranging from $\frac{1}{2}$ to 7 acres were established.

The development was designed primarily to benefit turkey and deer which are to be restocked in this area. Quail, Rabbit, Squirrel, Raccoon, Mourning Doves, and other resident or migratory wild life have benefited by the food patches. From records kept on wildlife, there has been a noticeable increase in Quail, Rabbits, Waterfowl, and particularly Squirrel.

However, much additional food development is needed to increase the wildlife production on the entire 30,000 acres of the Clemson Land-Use Area.

All of this preliminary work leads up to and integrates with the project now in force. The investigation to be made under this project include:

1. Pasture land management for wildlife.
2. Determination of the value of Lespedeza bicolor in wildlife management.
3. Study of Mourning Dove mortality and the effects of Trichomoniasis on these birds.
4. Management of timberland for wildlife.

A study area of 2,200 acres of Clemson Land-Use pastureland, under the supervision of the college Animal Husbandry Dept., has been set up for the investigation on the pastureland management for wild-

life. An area of about 3,000 acres of pastureland under the supervision of the Dairy Department of the college will serve as a control or check area in this investigation.

The study area of 2,200 acres has been split into six sections, separated by natural land features such as woodlands or streams and are posted. Standard quarter-acre woodland-pasture border food plots are distributed in replication and

FISH & GAME

Effective July 1, 1952, the South Carolina Fish and Game Department became the South Carolina Wildlife Resources Commission. This commission is directed by a seven man board with one commission from each Congressional District and one at large. These men are as follows: George Warren, chairman of Hampton; Edward B. Cantey of Columbia; F. Brandon Smith, Jr., of Anderson; J. Drayton Hopkins of Simpsonville; R. A. Oliphant of Chester; D. T. McKeithan of Darlington; and Edward W. Johnson of Spartanburg. The first six board men listed represent the first, second, third, fourth, fifth, and sixth Congressional Districts of South Carolina; and Mr. Johnson works at large.

equi-distant on each of these sections at the ratio of one plot to each twenty five acres of fenced pastureland. Six variations in planting of these plots are being tested.

Lespedeza bicolor, Rosa multiflora, and Lespedeza Sericea are being used. The primary job of the investigation will be to determine the influence of these plots on resident wildlife with particular emphasis on

quail and rabbits. Accurate seasonal measurements of the numbers of wildlife and patterns of distribution over a number of years should reveal which techniques are most useful in attempting to maintain, restore or build up wildlife populations in pasture situations. This investigation on pastureland management for wildlife should also aid in determination of the value of Lespedeza bicolor in wildlife management.

Work on the other three phases of this project has now gone through a reconnaissance stage. It is expected that as soon as graduate student assistants can be assigned to these other phases, this entire project will move ahead more intensively. Already, four Mourning Dove routes, correlated with a southeastern states study of the doves, have been set up and run for one or two seasons. A Dove Sanctuary of 650 acres has been established on the Clemson College land and several food plots totaling about 18 acres have been established with particular emphasis on attracting mourning doves. At the present time there are now on the Clemson College lands, under posted protection, three mourning dove winter-concentration areas which will be useful in banding and mortality studies.

This project is unique in that it calls for the use of four graduate student assistants who will pursue graduate studies at Clemson College under the supervision of the Entomology - Zoology Department., and work on the four investigational phases of the project. These students are expected to spend two years in graduate studies and investigational work. In this, Clemson College in cooperation with the State Department of Wildlife Resources, expects to train a nucleus of men for the wildlife management program in the state.

Editorial—

RELIGIOUS EMPHASIS WEEK

By JOE O'CAIN, Associate Editor

Religious Emphasis Week at Clemson brings a sort of closeness and unity to all Clemsonians. It is a week set aside to bring about and to increase the real meaning of fellowship, brotherhood, and religion. In the past, Religious Emphasis Week has meant much to Clemson. Outstanding speakers, forum leaders, and student church workers have made Clemson's Religious Emphasis Week a very successful one.

Reverend R. Wright Spears, president of Columbia College, will be the student convocation speaker at Religious Emphasis Week this year, February 10-13. Again this year, seventeen discussion leaders will visit the various R. O. T. C. companies; special Evening Watch and Morning Watch programs will be held.

The convocation speaker will deliver his messages at 11-12 o'clock Tuesday through Friday, February 10-13 in the College Chapel. Attendance is purely voluntary.

Planning months in advance for the week's religious program are the following executive committee heads to whom much credit is due: Professor Ben Goodale, faculty chairman, Thornwell Dunlap, student chairman, Mr. G. E. Metz, vice chairman, and Mr. J. R. Cooper, executive secretary.

Come to church February 10-13.

OUR SPECIAL THANKS:

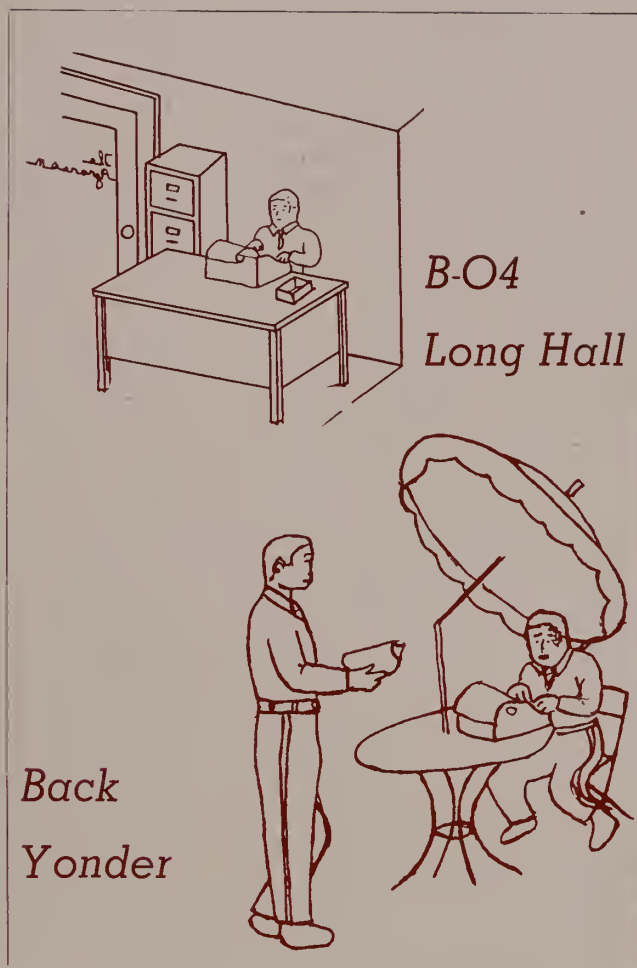
THE AGRARIAN owes its life and future success plus a million thanks to T. L. Senn for his efforts in procuring our new office and to Dean H. P. Cooper for granting us the use of a room as an office.

IRAN DELEGATE STUDIES

Bagher Kia, a Chief of State Representative of Iran's seven year plan organization, was recently on the Clemson Campus studying the marketing and ginning of cotton. Mr. Kia made a two week tour of the cotton industries and facilities in this area in addition to discussing his problems and plans with the experts in the college and in the extension service.

Mr. Kia is from Tehran, the capital city of Iran. His major task in the United States, as a representative of the cotton processing companies

JANUARY 1953



FROM THE OPEN SKIES TO THE SHELTER OF AN OFFICE

THE AGRARIAN has never been fortunate enough to boast of having an office before. We feel that this work room is a great advancement toward the publication of greater Agrarians in the future.

THE AGRARIAN office is located in the basement of Long Hall, B04. It is in this room that most of our work is accomplished.

of Iran and the Government, is to learn the standard American method of ginning, grading, and classifying raw cotton. After his four months tour in the United States, mainly through the South, he will return to Iran to help develop their cotton processing industries.

Mr. Kia stated that he was very favorably impressed by the efficiency of industry and agriculture in the U. S. In addition, he stated that the response and cooperation given him at Clemson was very satisfactory.

TWENTY-FIVE

WINTER CARE OF LIVESTOCK

Continued from Page 10—

or hair and skin, is a very troublesome thing to animals. Burrowing into the skin to lay eggs and constantly piercing the skin to withdraw lymph, mites cause irritation to the animal. The best control is to apply one-half pound of chlorodane, 40 percent wettable, to 10 gallons of water, 1.63 pounds BHC, 12 percent gamma isomer, to 10 gallons of water or 1 pound of 25 percent lindane and 25 gallons of water. If cattle have wrinkled folds of skin about the neck you can be fully sure that mites are there.

Hogs are also bothered by mange mites, not only in the winter but throughout the year, and the intense itching causes lowered gains. Areas first affected are around the eyes, ear, and nose, and then the neck, shoulders and back become covered with these mites burrowing into the skin and often hiding under concealment of a brown scurf. Hair falls out and a thick wrinkled skin appears. Scabs may form which, when rubbed off, leave the skin red or yellowish with blood and serum. Control and

quick relief is available with a dip or spray of 1 pound BHC, 12 percent gamma isomer, per 10 gallons of water. Submerge the whole hog when using the dip, or if a spray is used the pressure should be between 50 and 250 pounds per square inch, using one-half to one gallon per animal. Do not use BHC within 30 days of selling the hog because the fat absorbs BHC and would impair the quality of the bacon and the ham. Cattle grubs are important too! USDA estimates the damage done to meat and hides at no less than 50 million dollars, but besides that, animals are injured by trying to escape from the dreaded heel flies which are responsible for the cattle grubs. For 60 days during the winter the grubs are in the backs of cattle. In South Carolina this period is from January to March. During that time the control should be administered, for soon after that the grubs drop to the ground and grow into the dreaded heel flies. The heel fly's only purpose is to lay eggs. She has no mouth with which she can feed, she quickly dies. The eggs she lays hatch into grubs which burrow directly into the skin and muscles, or if licked off by the animal they burrow through the intestines

and slowly travel through the muscle. Finally they emerge during the winter in the back of the victim, where the cycle starts all over again. The grubs may be squeezed from the backs of cattle, but if there are very many, a better practice is to use derris dust or 5 percent rotenone dust, rubbing it well into the backs so that it gets into the breathing pores of the grubs. BHC spray is also good. The recommended mixture is 6 1-4 pounds of 6 percent gamma isomer BHC to 100 gallons of water. Nozzle pressure should be at least 60 pounds per square inch. These grubs also infect deer, and birds, but do not infect horses and hogs. Since heel flies do not travel over a mile, neighboring livestock owners can get together and prevent infection. All new cattle especially should be checked at the time the cattle grubs appear in the section of the country whence the new cattle came.

Feeding animals properly, treating them kindly, and keeping them free from pests and disease will result in a contented, happy, and healthy herd. Dividends will be paid in the form of higher milk production, more beef and pork, and better calf or pig crops.

PRE-FORESTRY

Continued from Pages 18—

foundation on which he can build with the technical knowledge which he will receive at the institution where he finishes his education. An individual who has done average, or above average, work at Clemson will have no trouble obtaining acceptance to any college in the United States offering forestry training. Because of this school's exceptional facilities for forestry education, Clemson students who are finishing, or have already finished, their work at the University of Michigan, the University of Georgia, North Carolina State, the University of Florida, or Duke Graduate School are better prepared for the more technical aspects of forestry than the students who received their fundamental training at these colleges.

The man who has finished the pre-forestry course at this institution carries with him, when he leaves, a

vast reservoir of knowledge and practical experience, a reservoir which he will find to be invaluable to him throughout the rest of his time in school and even afterward, when he is working in his chosen profession.

*A timber cruise is an inventory of the forest. A complete article on this type of work appeared in the November, 1950, issue of the *Agrarian* in an article entitled "Timber Cruising," written by R. M. Farmer.

AGRONOMY STUDENTS

Continued from Page 16—

ther. There the students from the warm south were snowbound and had to spend the night. The next morning the roads were cleared of the record 22 inch snowfall, and the students were able to return to Clemson. The students indicated that they enjoyed the trip very much and that they learned a great deal from the experiences.

SOIL CONDITIONERS

Continued from Page 13—

ment of the soil structure and an increase in the water holding capacity in the soils treated with the synthetic soil conditioners.

The synthetic soil conditioners may have a permanent place in modern agriculture, but much research should and must be done on these products before they are released to the farmer in large quantities. Never forget that soil is the greatest resource in the world, and every measure should be taken to conserve it to the greatest extent.

"To have useful work to do and take joy in it lifts the soul and lightens the load and makes us collaborators with God."

* *

"When de preacher comes, de chickens cry."

Horticulture—

Continued from Page 12—

oil. Years ago this plant was grown as a source of seed for wild and domestic or cage birds. You may know it as Benne. Should you know the plant by that name, you also know that it is used in candy and cookies. Not only that, you probably consume the oil of the seed everyday in many things you eat. The commercial products, oleomargarine and shortening may someday contain largely sesame oil. These plants are native of India, China, Mexico and South America, where the latter two have devoted large acreages to sesame culture. Much progress has been made in this field. The original sesame plants were dehiscent (the seed pods would open, expelling the seed). This meant that there could be only a limited yield since most of the seed would fall to the ground, rendering itself unusable. Research has brought about a new type, indehiscent, which can be harvested by a combine. However, as in any scientific endeavor, there are still problems to overcome; primarily, that of breeding into the sesame plant, resistance to bacteria and alternaria leaf spot.

Speaking of problems, did you know that South Carolina has lost undetermined sums of money because of COLOR. Yes, color in the Cayenne Pepper. The pod of the peppers has a tendency to lose its red color after it is picked and dried. The manufacturers refused to buy the pepper because of its abnormal brown color; so South Carolina research men went to work on the project. After eight long years, they discovered a substance which would retain the red color to various degrees. The use of antioxidants, the same material used in lard and shortening to prevent rancidity, have shown great possibilities. Further research and observation brought about a revival of the Cayenne Pepper industry in South Carolina. Incidentally, application for patent has been made with the United States Patent Office.

This is really "Hot" news! Clem-

son workers have developed a pepper too hot to pick. Wherever this pepper is grown, there is always trouble getting laborers to pick it. Do you like hot pepper? Well, here's one straight from the fire!

Recently, a happy mother wrote a letter of appreciation to the horticultural department here at Clemson praising its members for the remarkable work accomplished with canned peaches. She stated that her child has a "sparrow-like" appetite for everything except Clemson peaches. He even asks for seconds when CLEMSON PEACHES are on the table. Although the horticultural department of Clemson does not process its peaches commercially, the product is known throughout the United States. The canned peaches are revolutionary in flavor, color, and general appearance, and this was brought about as a result of class, experimental, and research work.

There are numerous other projects of this nature being worked on at Clemson as well as other colleges and experiment stations.

Some of these include: Perilla, a genus of Asiatic mints, the seed of which provides an oil used in paints and varnishes for good drying qualities.

Clemson Spineless Okra is a popular vegetable crop in many sections of our country because of its pe-

culiar quality of spinelessness.

Pimento peppers developed at Clemson are being checked by the Kraft Cheese Company for adaptability in the process of making cheese spreads.

Aromatic tobacco, an agronomic crop is having its aromatic qualities tested and improved by the horticulturists.

Clemson's peach pitter removes the seed of approximately forty bushels of peaches per hour. Also the continuous cooker now cooks in five minutes what would ordinarily require twenty-five minutes.

These are only a few of the steps in the progress of horticultural science. It is easy to see why horticulture is such a necessity in our modern age. We either use or enjoy its products in our occupation or ravishly consume them in our everyday life.

If plants have been cultivated 10,000 to 12,000 years, then it must be true that horticulture is the father of all plant sciences.

The author has endeavored to give the reader an understandable and practical knowledge of horticulture as it applies to everyone, and his fervent hope is that one and all will realize its important role in our search for beauty, health, and a long happy life.

BEAUTIFUL

Holly Hill Inn

Greenville Hi-Way ½ Mile East of Clemson

Delicious
Home Made
Pies

Steaks
And
Chops

— Nothing Finer In Carolina —



Prof Dunavan

DUNAVAN REPRESENTS STATE AT CONVENTION

A recent event of interest to beekeepers of South Carolina was the annual meeting of the Southern States Beekeeping Federation in Baton Rouge, Louisiana on December 1st and 2nd.

Professor David Dunavan of the Entomology Department was the only representative from South Carolina present. He states that this organization is the oldest organization representing primarily southern beekeeping interests, and is, in fact, one of the oldest beekeeping organizations in the entire United States. The American Bee Breeders' Association which met with the older organization is of more recent origin though it, too has its membership mainly in the South.

The combined meeting was one of the largest held in recent years in the South. Honey producers, package bee producers and queen bee producers as well as representatives of state and federal research and extension organizations were present. In all, nine states and the District of Columbia as well.

Many problems of national scope as well as those of concern to southern beekeeping had places on the program and were discussed at length. Some of these were: honey

sales promotion, the PMA honey price support program, and problems relating to adequate polination of agricultural crops by bees. A matter of special concern to a large number of southern bee producers and discussed at length, was the increasingly high express rates on the many tons of live honey bees moved each spring from southern bee yards to northern beekeepers for honey production and crop pollination.

Clemson College and South Carolina beekeeping attained recognition in the election of Professor Dunavan as president of the organization for the coming year. Other officers are Leslie Lewis of Havana, Florida, vice-president and Mr. W. E. Blasingame of the Georgia Department of Entomology, Atlanta, secretary-treasurer. The next annual meeting will likely be held in Georgia or South Carolina. The last time the organization met in this section of the South was in 1948 when it was held in Greenville, South Carolina.

Officers of the American Bee Breeders' Association which will like-

ly meet with the Federation are: Leslie Little, Shelbyville, Tennessee, president; J. W. Newton, Baton Rouge, Louisiana, vice-president; and R. S. Weaver, Jr., Navasota, Texas, secretary-treasurer.

THE PEACH CENTER

Spartanburg county has more peach trees than any other county in the U. S.

Counties:

Spartanburg,	1950—2,545,671 trees
	1945—2,021,049 trees
Stanislaus	1950—1,979,404 trees
Calif.	1945—1,904,544 trees
Barrien	1950—1,854,888 trees
Mich.	1945—2,332,605 trees
Sutter	1950—1,568,388 trees
Calif.	1945—1,661,956 trees

The first name of the agricultural publication of Clemson was called "The Clemson Agricultural Journal."

* *

The first Agrarian was published in December 1938.

WOOD'S SEEDS

Headquarters for
FLOWER, FIELD,
GARDEN SEEDS,
HYBRID CORN
Bred by the
Largest Southern
Seed House



T.W. WOOD & SONS

RICHMOND, VA.
SEEDSMEN SINCE 1879

WHAT CAN THE FARMER LOOK FOR IN 1953

Continued from Page 19—

for more sacrifices, more diversification, and better farming methods by the American farmer.

The young farmer is faced with the problem of being able to establish his farming operations so that a tour of duty in the service will not wreck his future. More than one herd of cattle has had to be sold because there was no one to carry on the operation after the young man received his orders.

However, the American farmer must not become discouraged. There are those who look down on the "tiller of the soil," but a thinking and reasoning man can hardly have this idea. Farmers do not expect to make great fortunes, but their reward comes in the performance of their task.

In conclusion we might say that the farm program can not be allowed to remain at a standstill. It must get out of the rut and move forward to bigger and better things. The farm program must produce more food and fiber from fewer cultivated areas with less labor. This is going to require early planning and financing, care-

ful preparation of the soil, and well trained and diligent workmen to carry the plans to completion.

In 1953, may the American farmer not put all of his eggs in one basket, but strive to fill all baskets to the brim and thus receive greater returns than he has ever experienced. Farming is a good business so let's strive to make it a bigger and better business in 1953.

First Farmer: "Which is correct: A hen is sittin' or hen is settin' "?

Second Farmer: "I don't know, and I don't care. All I bother about is when she cackles—is she laying or is she lying?"

* *

Here a problem that
Gives us the jitters;
How can rabbits find
Enough baby sitters?

It was their first date and they were both thinking about the same thing.

She called it mental telepathy. He called it beginners luck.

Etiwan Fertilizer Company

CHARLESTON, SOUTH CAROLINA

Independent – Prompt – Reliable

—Manufacturers Of—

DEPENDABLE FERTILIZERS SINCE 1868

GARDENING IN THE SOUTH

CARING FOR POINSETTIAS

Potted poinsettias may be kept in any warm place and watered very sparingly during their rest period after blooming. If the leaves fall off during this period, no harm is done. It is not usually necessary to repot them as long as the soil in which they are planted is not too heavy and drains well. They will do better in an alkaline rather than in acid soil. The old stalk may be cut back within two buds of the soil line. To make cuttings of the stalks that are removed, cut off each section below the bottom bud about half an inch above the top bud. Put the cuttings into sand or light, well drained soil until rooted. If the plants are grown in the open and there is danger of freezing, they may be cut back almost to the ground level and then covered with straw. In the spring after they begin to grow, they can be pruned or pinched back until about the middle of August. Do not prune after this date because the new growth may not mature enough to produce good flowers for Christmas. They will require little plant food until the flower bracts begin to show, aside from a teaspoonful of Vigoro worked into the soil when growth begins, which is beneficial. When the flowers begin to form, give them another teaspoon of plant food to each 10-inch pot or, if growing outside, a half a cup worked into the soil.

GARDENING TIPS

By THE MASTER GARDENER

In the lower South, plant Easter lilies, day lilies and even gladiolus along the gulf coast and in Florida. Move nursery stock while the plants are still dormant.

* * *

Remember if you use salt for sidewalk snow and ice, that the salt solution is not only damaging to the lawn grass, but will also destroy soil structure by causing puddling or running together.

THIRTY

HUNGRY PLANTS TELL THEIR STORY!

By The MASTER GARDENER

Garden plants, even as you and I need a balanced diet. Plants are living things which must have certain nutrient elements for normal growth and development. Underfed plants, like starving people tend to become puny, sick and ill formed. They display their symptoms for everyone to see. Plants need many elements to grow well. Carbon, hydrogen, nitrogen, and oxygen comprise about 95% of their dry weight of the plant. Practically all of the carbon comes from the carbon dioxide in the air while hydrogen and much of the oxygen comes from water taken in by the roots. The rest of the oxygen is obtained from the air. Although air also contains 78% nitrogen, no plants, with the exception of legumes, are able to use this source, and must depend upon the supply in the soil.

The other necessary elements, calcium, magnesium, sulphur, iron, boron, manganese, copper, zinc and molybdenum, plus a host of other elements not known to be essential,

make up the remaining 5% of the plant's weight. These elements must come either from the soil or from the plant foods supplied by man. When one or more of them is lacking, the plants will, in their characteristic way, show hunger signs. When plants are literally "starving to death" the symptoms are fairly easy to recognize but when they are merely "hungry," diagnosing the trouble is more difficult even though yields may be reduced or blooms become inferior in size and color.

Why do we hear so much about hungry plants today when so little was said about them a few years ago? In the first place, our soils are becoming older and much of the plant food has been removed by cropping and erosion. Infertile subsoil covers many a newly graded lot in newly built-up areas. Altogether, this presents an area of nutrient deficient soil. So be prepared for hunger signs, and beat them to the punch with regular plant food applications to your lawn and garden.

Now that the days are growing longer and house plants are growing more rapidly, feed them every two weeks, with new watersoluble Instant Vigoro. Just dissolve two level tablespoons per gallon of water and apply as you would a regular watering.

* * *

In California, get your fuchsias ready for the coming season by pruning them after all danger of frost is over. Potted specimens should be fed with three or four Vigoro tablets depending upon the size of the pot.

Agriculture

"There seem to be but three ways for a nation to acquire wealth. The first is by war, as the Romans did, in plunging their conquered neighbors. This is robbery. The second is by commerce, which is generally cheating. The third by agriculture, the only honest way, wherein man receives a real increase of the continual miracle, wrought by the hand as God in favor, as a reward for his innocent life and his virtuous industry."

—Benjamin Franklin

FACTS AND FIGURES

Today you can see the greatest concentration of peach trees in the world around Spartanburg. In 1923 South Carolina shipped 16 carloads of peaches, but in 1951 the shipment was increased to 11,000 cars. Since 1946 South Carolina rail shipment of peaches has led all other states by a substantial margin, and has reached a peak shipment of 769 cars in one day. It takes 40,000 people to get Spartanburg peaches ready to roll and some of them come from 100 miles away. All of these instances again indicate that the Spartanburg Section dominates the peach situation during its peak movement.

* *

'Masa' is a staple food in Mexico made by mixing corn with slaked lime and after steeping for several hours in hot water, it is drained, washed and ground into a dough.

THE AGRARIAN

Organize FFA Groups Right; Chapters Serve Community

By JOE O'CAIN

"Learning to do, doing to learn, earning to live, living to serve." That's the Future Farmer's of America motto—and those few phrases mean a lot when you come down to brass tacks!

The F. F. A. began as a national organization in 1928 and was founded by Henry Groseclose. Since that time F. F. A. chapters have sprouted up all over the country and are growing into real farm businesses. Those young farmer organizations assist new farmers to become established on the farm. It helps them to work and plan together; it gives the opportunity to render community service; it promotes rural leadership.

PURPOSE OF F. F. A.

With many F. F. A. chapters throughout the country trying to organize their program of work for the year, probably a general review of the purposes, organization, and various ideas along the future farmer line would be of benefit to many.

First of all, the chief purpose of the organization is to develop competent aggressive rural and agricultural leadership and to create a love of country life.

FOUNDATION BLOCKS

The F. F. A. chapter is a service organization which constantly learns by doing. The foundation blocks of the chapter are the same used in any service organization, only more widely expanded. Beginning from the bottom, leadership, character building, sportsmanship, cooperation, service, and thrift, joined with scholarship, steadfastness improved agriculture and citizenship.

ORGANIZATION

Officers consisting of the president, vice president, secretary, treasurer, reporter, advisor and sentinel are elected as soon as all members become familiar with the purposes and program of work. With the assistance of the advisor, nine standing committees are then organized. The usual committees are supervised farming, cooperation, community service, leadership, earning and saving, conduct-the-meeting, scholarship, recreation, and general.

The Secretary's job is one of the most important. He's expected to keep records of meetings, activities, provide statements of businesses, furnish chairman with lists of committees and its members, take care of all correspondence, and to be familiar with the state constitution.

The Journal Press

- =====
- * OFFICE FORMS
- * BOOKS
- * NEWSPAPERS
- =====

Estimates given without obligation.

Phone 666 — Seneca, S. C.

Bees Distribute Gold In Orchard

One optimistic entomologist has said that a thriving beekeeping industry keeps our agricultural nation from suffering. He's right!

In many cases the bee governs the production of fruit. True, many fruit trees are self-pollinated by bees, but in the case of self-sterile, they must consequently be cross-pollinated by bees, the wind, or by hand labor. You can imagine how expensive hand pollination would be. Such self-sterile fruit trees, as in the case of the apple varieties, must be cross-pollinated in order to set fruit. Here's where the ever working little bee comes into the picture. Since the nature of apple pollen is quite heavy and sticky, the presence of the honey bee in the apple orchard is a must in successful fruit production.

One case in which the honey bee filled the apple producers' pockets full of gold is illustrated as follows: An orchard owner on Lake Ontario had 50 acres of apple trees well interplanted with pollinated varieties, but very little fruit was set each year. An investigation of this poor production showed that only eight individual insects were found in eleven days of collecting, indicating the lack of pollinators. The following year, sixty colonies of bees were introduced into the orchard. Production increased from 750 to 35,000 bushels!

Clovers, alfalfas, vetches, and many other pasture crops will show the same results when extensive honey bee pollination is used.

—TALL CORN—

And then there was the student who wrote: "Virgin wool comes from the sheep who can run the fastest."

* *

RAMMER JAMMER

A tobacco farmer was asked why he refused to allow his daughter to enroll in college.

"Wal," he replied, "I started gittin' mad when they told her to go to the Registrar's Office to matriculate, but by cracky, I shore put my foot down when they said that she had to use the same curriculum as the men!"

* *

Once there was a traveling salesman. He was new to the job—but he had heard a lot of jokes about farmers' daughters. So when it got late, instead of stopping in town, he went to the nearest farmhouse. The people were very hospitable; they invited him to spend the night. They had a Daughter! And as usual there were only two bedrooms, one for the couple; and the salesman was told to sleep in the daughter's room.

About nine o'clock they all went to bed for a good night's rest. The next morning, the farmer got up, his wife got up, the salesman got up, and the daughter got home from college.

* *

"I had to run into a fence to keep from hitting a cow standing in the middle of the road," the motorist complained to the judge. "Was it a Jersey cow?" the judge asked. "I don't know. I didn't see the license plates."

* *

Big drop of ink: "Where has your big brother been lately.

Little drop of ink: "Haven't you heard? He's in the pen, finishing a sentence."

* *

A little city boy who had been to the country, was describing to another boy friend the big pig he had seen. "It was in a pen," he said, "and was afraid of all the little pigs. They would chase the big pig all over the pen, around and around, and pretty soon it fell with exhaustion, and the little pigs pounced upon the big pig and ate all of the buttons off his vest."

* *

REVENGE—The bull gored the car of the veterinarian who was the artificial insemination agent.

* *

LOVE COWS?

It was late dusk; the moon was just showing on the horizon. The farm boy and the girl from town were leaning on the pasture bars watching the calf and its mother rubbing noses.

"Gee!" said the farm boy, "I'd like to be doing that."
"Go ahead," smiled the girl. "It's your cow."

* *

Prosecuting Attorney: "It's my duty to tell you that everything you say will be held against you."

Defendant: "Marilyn Monroe, Marilyn Monroe, Marilyn Monroe . . ."

THIRTY-TWO

A mountaineer of one of the back counties of Kentucky was arranged with several others for illegal distilling. "Defendant," said the judge, "what is your name?" "Joshua," replied the man.

"Are you the man who made the Sun stand still?" Quick as a flash came the answer, "No, sir; I am the man who made the moonshine."

* *

A cow-puncher ordered a steak at a restaurant. The waiter brought it in rare—very rare. The cow-puncher looked at it and demanded that it be returned to the kitchen and cooked.

"It's cooked," replied the waiter.

"Cooked—nothing," replied the cow-puncher. "I've seen cows hurt worse than that and get well."

* *

A woman may be as old as she looks, but a man is old if he doesn't.

* *

A wedding ring is like a tourniquet'. It stops your circulation.

* *

There was a little country girl who came to college and always went out with city fellers because farm hands were too rough.

* *

"Ever kiss a girl in a quiet spot?"

"Yes, but it was only quiet when I was kissing it."

* *

Father—Are they strict at Clemson?

Son—Well, one fellow died in class, and they propped him up until the lecture ended.

* *

The student gets the magazine,
The school gets the fame,
The printer gets the money,
The editor gets the blame.

—The Tiger

* *

Clemson Cadet: I'm groping for words.

Winthrop girl: I think that you are looking in the wrong place.

—The Tiger

* *

He: "What would you say if I stole a kiss?"

She: "What would you say too a guy who had a chance to steal an automobile and only took the windshield wiper?"

—The Tiger

* *

He: You look like a million dollars.

She: Yes, and I'm just as hard to make.

—Show Me

* *

He: "There's a long tunnel ahead. Are you afraid?"

She: "Not if you take the cigar out of your mouth."

* *

King Arthur: "I hear you have been misbehaving."

Knight: "In what manor, sir?"

THE AGRARIAN

THESE **CLEMSON**
BOOK
STORE

2_____

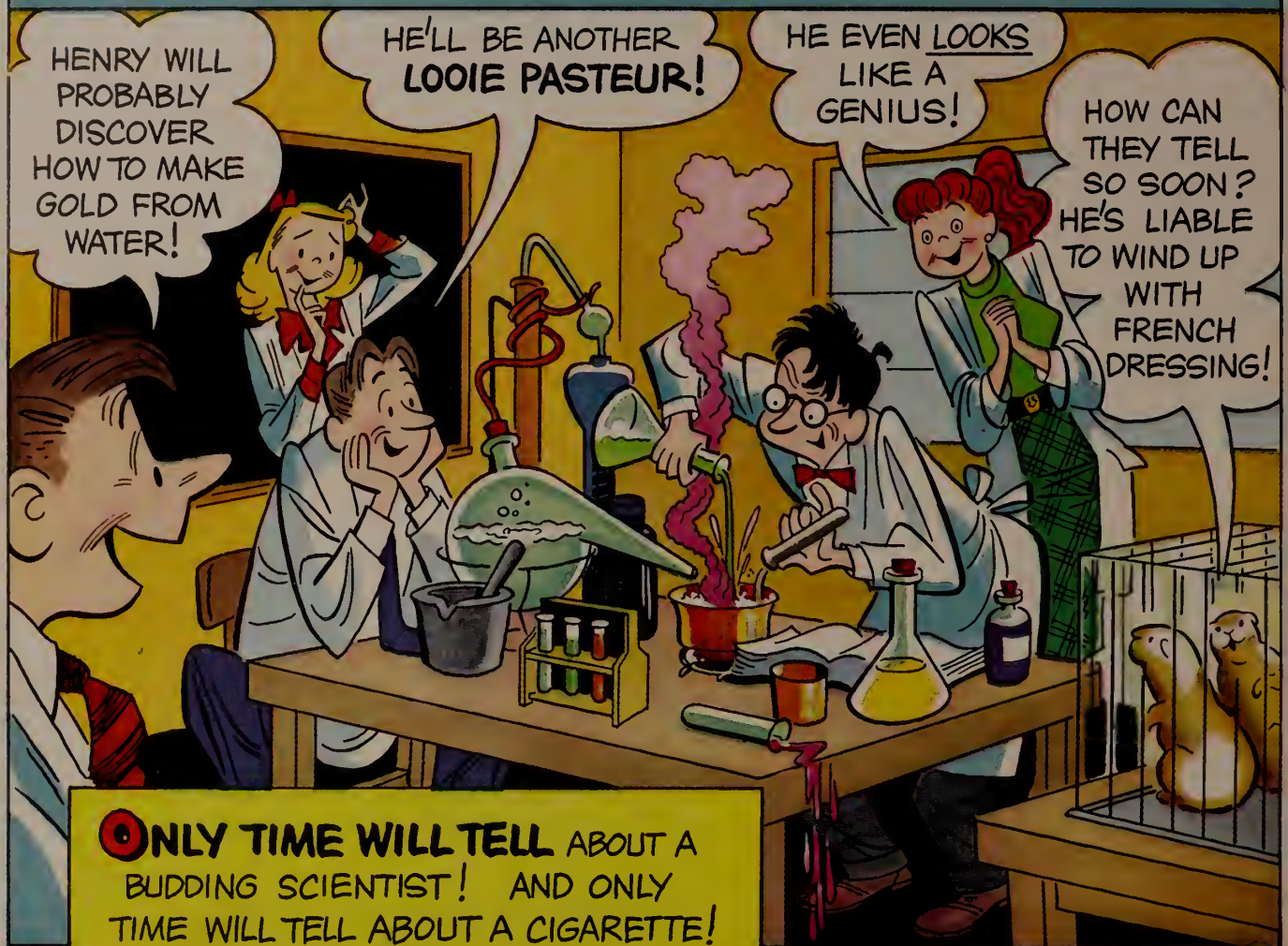
•

ARE **L. C. MARTIN**
WORKING **DRUG CO.**
FOR YOU

*Serving Clemson Students, Clemson People
and Clemson's Friends and Visitors is Our
Way of Mixing Pleasure with Business*

"WHERE ALL CLEMSON MEETS"

...*But only Time will Tell*



R. J. Reynolds Tobacco Co., Winston-Salem, N. C.

Test **CAMELS** for 30 days
for Mildness and Flavor!



● Why is Camel far and away America's most popular cigarette? There's a simple answer: Camels give smokers just what they want—rich, full flavor and cool, cool mildness . . . *pack after pack!* Try Camels yourself! Smoke only Camels for 30 days and see how mild, how flavorful, how enjoyable they are as your steady smoke!

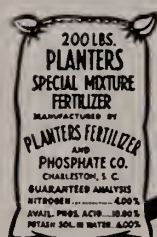
CAMEL leads all other brands by billions of cigarettes per year!

THE
AGRARIAN

Clemson College + Spring 1933



SERVING THE FARMERS IN NORTH AND SOUTH CAROLINA SINCE 1906

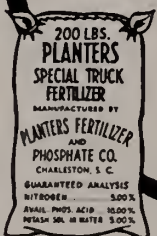


VIEW OF THE Planters Fertilizer & Phosphate Co.

We maintain the highest standard of excellence in the manufacture of Planters Fertilizers. Our trade-mark on every bag is a guarantee that you are getting the Best Fertilizer Made. To produce increased yields, fertilizer must contain:

NITROGEN • PHOSPHORIC ACID • POTASH

In such proportions that it furnishes available and soluble supply of plant food at all times. Thousands of Farmers all thru the South testify to the great results secured from the use of these well known brands:



"SPECIAL MIXTURE FERTILIZER".....	4-10-6
"SPECIAL MIXTURE FERTILIZER".....	3-9-9
"PEE DEE TOBACCO FERTILIZER".....	3-9-6
"SPECIAL TRUCK FERTILIZER".....	5-10-5

They will produce larger crops, enrich the soil and make it more productive for future crops. Ask our agent or write us direct for information about the best fertilizer for your land.

Planters Fertilizer & Phosphate Co.
CHARLESTON, S. C. CHARLOTTE, N. C.



Planters Fertilizer & Phosphate Company

Charleston, S. C.

Charlotte, N. C.

THE AGRARIAN

Volume 12

The Clemson Agricultural College

Number 2

William F. Stewart, Jr.
Co-Editor

Joe W. O'Cain
Assoc. Editor

Ronald M. North
Co-Editor

Peter L. McCall, Jr.
Advertising Mgr.

Jackie Sanders
Business Mgr.

W. Joe Cunningham
Circulation Mgr.

Jerry Hammett Feature Editor
Edwin F. Nolley Dept. Editor
Vance A. Loy News Editor

Ramsey Hawkins Photography
Jack Trimmier Photography
George Kinard Photography

Departmental Writers—

Cecil G. Walters, Donald B. Dunlap, Douglas Owens, Jack Workman, Jimmy Young, Howard N. Rawl, Bill Garren, Robert E. Poston, Bobby Dukes, Robert Hollingsworth, Harry D. Vildibill, Jim Wilson, John Turner, Gene Norris, J. C. Burns, Baxter Hood.

Advertising Staff—

William E. Byrd, Norman E. McGlohon

Circulation Staff—

Jack A. Salters, Lock McKinnon, Rudolph Kemmerlin.

Advisors

B. E. Goodale
T. L. Senn

THE COVER: It's spring, 1953, and as the American Farmers begin planting their crops you can see the full extent of mechanization with the ensuing speed and efficiency, as the mechanical horses take over and the "hayburners" with their slow plows fade out in the background. Photo by Ramsey Hawkins, retouched by George Porcher.

IN THIS ISSUE

Guest Editorial	Page 3
The New South	Page 4
The History of Polled Herefords	Page 5
Professional Personalities	Page 6
Danforth Fellowship	Page 7
Clemson's Seniors	Page 8
The Rural Church	Page 10
When Will We Win	Page 11
Did You Lose Money	Page 12
More Milk Through Artificial Breeding	Page 14
Between The Furrows	Page 16
Agarian Philosophy	Page 19
Economical Fried Chicken	Page 20
Caution—Radioactive Materials	Page 22
An Agricultural Museum	Page 23
Feeds and Feeding Tour	Page 23
Will Your Bull Be A Beauty	Page 25
The Disease Called "X"	Page 26
Ag. Students Will Visit Europe	Page 27
Losses In The Mortgage Lifter	Page 28
Seeing Is Learning	Page 29

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising rates: one-fourth page, \$15.00; one-half page, \$28.00; one page \$50.00.

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

Down To Earth

By JOE O'CAIN
Associate Editor

* *

THE WORLD SINGS . . .

There's a sort of softening in a fellow's eyes in the Springtime. Perhaps it's spring fever, and love's old sweet sentiments are felt more deeply . . . When old February with her gray stinging wings fly northward and on comes little fluttering and nippy March, a sort of rebirth is put into a fellow's soul; the new world comes out under her veil, the buds burst forth, the sun glows brighter, the world sings, and I am strangled with Nature's love and beauty! I am reminded of Bryant's "To him who in the love of Nature holds Communion with the visible forms she speaks a various language."

The world lives on! And April turns to May—and June bugs come with the hot August skys—and summer meets winter under an aged yellowed tree at the turn of the road . . . But Nature lives on! The old earth and mountains remain silent, and the sky flings her warm quilt down for the sleeping earth . . . "And the blue hills grow tender, When they pull the twilight close with gesture beautiful."

—Grace Conkling

AND SPRING IS BORN

An azure sheet is stretched across the barren Earth. A hum, a whisper of silent prayer, and the silent pacing of tender feet is heard walking down the furrows of heaven.

In Thou bosom is silent truth
Of love and promise for our
young,

Those visions and songs that I
have sung,

Hush, now, the calm, cool winds
do blow,

And cries from babes are heard
below

The budding earth I covet so.

The swelling breast I cherrish so!

Your Trade Mark
**For Quality Hybrid Seed
 Corn**



Also
 Wholesale Producers And Distributors of Cotton
 Seed, Wheat, Oats, Soybeans, Tobacco Seed, Les-
 pedeza and Crotalaria.

McNAIR'S
Yield-Tested Seed Co.
 Laurinburg, North Carolina

SPRING TIME IS AROMATIC
 TOBACCO PLANTING TIME.



PLANT AROMATIC TOBACCO
 FOR THAT
 BOOST IN INCOME.



For That Ready Market Contact



SOUTHEASTERN
Aromatic Tobacco Co.

1628 East River Ext.
 Anderson, South Carolina

See us for your Houshold Needs
FURNITURE, APPLIANCES, CARPET,
 Etc.

Everything
For Farm & Home

Buick, Ford Automobiles
 International Trucks, Sales-Service

DENMARK
IMPLEMENT CO., INC.

—Phone 3963—
 Denmark, S. C.

Anderson
Fertilizer
Co., Inc.

DEPENDABLE — RELIABLE

Anderson, S. C.

Can We Hold Our Water!

by J. M. ELEAZER

In South Carolina our undeveloped potentials in agriculture are great. For several generations cotton has just about all of our attention. We became, and still are, very proficient in its growth. I have visited new cotton areas in another country. The average cotton grower in South Carolina could go there and stand out as an expert.

Yes, we have a tradition with cotton. Our fathers and grandfathers, and theirs before them, came up in the cotton patch. And along through the years we have absorbed and employed just about all of the known knowledge on cotton.

But in recent years our agriculture has undergone great change. I won't have space to go into all of that here. But it is sufficient to point out that we once grew close to three million acres of cotton in South Carolina. Now we barely grow a million.

That leaves close to two million of cotton's former acres idle or in something else. Now, it's awful important to you and to me and to oncoming generations as to what's happening on cotton's lost acres.

We know what happened to them at first when cotton departed. The old fields and rural lanes grew up in bushes, weeds, and briars, and the old houses, many of 'em fell into decay and vanished. And now their spot in many cases is marked by a scattering of brickbats where the old chimney stood.

At long last experiment and experience started finding new uses for cotton's lost acres. Grass, that had been fought on them for generations, was invited back. And we spent our money and efforts in trying to grow it, not kill it, as of yore. Up to then we had been referred to as the short grass area of the United States. And that we were. The worn out acres that we put into pastures then afforded little grass for hungry cattle that mostly took exercise there.

Since the beam of science has been turned on grass, not on how to kill it, but how to cater to it, a great discovery has been made. Instead of being in "the short grass area", as once thought, we are, if anything, in the "LONG GRASS AREA". And what meaning that has for the future here!

Yes, we have learned that we can grow good year around grass here. But we have yet learned very little about its proper management so as to get the most out of it. But we can expect experiment and experience to bring us knowledge of that, as time goes on. And with that, men can

now begin to see a livestock industry for this Southeast, that was formerly consigned to be forever a grower of rowcrops. And being that, with our open winters, shallow soils, and rather heavy rainfall, we could but look to a future in which both the soil and we could get poorer and poorer.

Grass, in all of its forms, means livestock in just about all of its forms. And with livestock and crops, we have the elements with which to build an agricultural future that is better than the crops lone past that have been our lot.

Surely the greatest undeveloped potential in South Carolina is irrigation. Add that to the diversification that's growing, and we don't see our limits.

We are in the heavy rainfall belt, with about 48 inches a year. If all the water that fell in South Carolina stayed for a year, we could swim anywhere in the state. But the trouble is, not much of it stays. And weather records over a long period of time tell us that we average about six droughts a year, of two weeks duration or longer.

In the past we stood those droughts. Costs were low. The principal things going into the making of a crop then were your strong arm and the old compost heap down there in the edge of the lot. When recurring droughts came and cut our promising prospects into sorry spectacles, and the harvest was scant, we were disappointed. But the Sheriff did not have to come to sell us out.

It is different now. Costs are high, and getting higher. When you lay your crops by, you have your fortune invested in those fields. And there must be a good harvest, or the Sheriff is liable to have to come to see you. It won't be a social call either. Farming has become so expensive now that we must do everything we can to insure the harvest. The average farmer knows how to make a good crop. He knows about good land, good seed, proper fertilization, good stands, insect and disease control, proper culture, and the like. And he can make a good crop, yes, IF HE

GETS THE WATER.

Ah, there is the principal thing that stands between you and a splendid harvest when you plant a crop. IF you can just get the needed water when you need it!

In quite recent years we have been experimenting and experiencing with this rather new thing for this part of the country, irrigation. And

—continued on page 18

THREE

the new SOUTH

by BILL GARREN, *Horticulture '54*

New Orleans! The site for the celebration of the Golden Anniversary Meeting of the Association of Southern Agricultural Workers.

Had you lived in Alabama, Georgia, Maryland, Florida, South Carolina, North Carolina, Virginia, Kentucky, Tennessee, Mississippi, Arkansas, Louisiana, Texas, or Oklahoma 50 years ago, you would have lived in the Old South. However, today those of us who live in these states are realizing the advancements and improvements which have brought about a revolution in Agriculture and industry which comprise the New South, the South on the march!

The A. S. A. W. and its members have played a major role in this change, and it was through the vision, inspiration, and leadership of these members, past and present, that so much has been done to bring about this metamorphosis in Southern Agriculture.

The South's saga of agriculture during the past half century unfolds a panoramic picture of progress studied with pageantry, color, and drama that has been motivated by epechal, economical, and social changes that have revolutionized this area. The Agrarian aspect has been heightened and not deterred by the phenomenal growth of industry, and hand in hand their forward march of prosperity is a glowing tribute to the pioneers in the field of Agriculture.

Yes, fifty years ago this was the Old South. It was the South of Cotton, of sharecroppers, of mortgages due, and bills unpaid.

Then something happened to the farm population. The great exodus was under way. As early as 1905 Southern Agriculturists were talking about the Negroes who were annually forsaking the farms for the cities. It was during this period that the colored worker's plaint was "Lay down the shovel and hoe; take up the fiddle and the bow."

The Southern farmer began to realize the urgency of this exodus and, slowly began to do something

about it. As a result, the South began to mechanize. The large areas lent themselves admirably to the use of machinery. The use of machinery has lowered production costs and increased yields per acre, and resulted in materially increased income and improved living standards.

Today the South envelops a huge area, and within its boundaries lie a great source of wealth. For example, Agronomy contributes largely to the welfare of Dixie with its field crops. Cotton and tobacco have contributed partially or very largely as the chief source of farm income in Southern States. Also, within the field of Agronomy, great emphasis is being placed on soil conservation, commercial fertilizers, and grassland developments.

Grasslands are of utmost importance because of the vast acreages being devoted to livestock production. With the annual increase of human population, which is now about two and one-half million per year over the entire United States, it has become necessary for men in animal husbandry to concern themselves with finding more abundant sources of food. Meat and meat products are ever in demand and Southern grasslands afford ideal conditions for livestock production.

In connection with animal husbandry, dairying has found an important economic place in the South. At the turn of the century, commercial dairying in the Southern States was making its first feeble steps. A few dairy departments had been started, and a few milk plants were selling ungraded and unpasteurized milk. For many years the cattle tick had checked livestock expansion and now the boll weevil was making inroads on the cotton crop. However, in 1920 the tick was whipped and dairying was on the march!

Agricultural economics has had one goal since its organization—to raise the standards of living. These devoted people accomplished their goal against great odds. They have looked ahead, pushed ahead, and

thereby assisted in raising the levels of living to new heights for people in the South.

Agricultural engineering has solved many problems that vexed farmers. Through its work, modern production methods have been made possible by use of equipment especially adapted to Southern regions. May their progress be as great within the next fifty years as it has been in the preceding fifty years.

The control of insects and diseases has contributed as much as any one thing to the economy of the South. The history of these two fields, entomology and plant pathology, during the last fifty years includes shining chapters as well as many long stories of disappointments and labor against heavy odds.

Much progress has been made in horticulture since its origin many, many years ago. The horticulturists have contributed to the beauty as well as to the economy of the South. The beauty lies within the hands of the landscape designer or the ornamental nurseryman; the economy within the grasp of plant breeders who have given us new and better varieties of fruits and vegetables.

The other equally important fields of agriculture such as forestry, poultry, home economics, marketing, soil conservation, and plant physiology have earned an enviable and respectable position in the progress of the South.

During the past fifty years, the economic position of the Southern farmer has been strengthened by the coordinated efforts of a great many men and women who have devoted their lives to that goal.

This half century of progress has not been easy. Members of the A. S. A. W. are to be congratulated for their sincerity of purpose in helping to provide the tools with which this difficult victory has been won, and for their refusal to be discouraged by the many obstacles encountered along the way.

THE HISTORY OF

POLLED HEREFORDS

by JIM WILSON, *Animal Husbandry '54*

The popularity of the Polled Hereford is on the increase not only here but also back in England, the home of the horned Herefords. There have been considerable numbers of polled animals shipped to Australia and some of the South American countries. There are several features possessed by the breed which account for its rapid rise of importance during the first half of the twentieth century. The most important of these are their polled character, early maturity, and disease resistant features along with being easy to handle. Compared to the other beef breeds, the Polled Hereford is one of the youngest.

Records show the old type breed of Herefords to be progressing well into its third century of breeding. It has been proven successful as draft stock during its early days of survival in its native home, Herefordshire, England. The famous Smithfield Cattle and Sheep Society was formed during December of 1798. In 1799, the club's first show was held, with a Hereford ox winning top honors.

Little care was given to the milking features of the early Herefords. In those days, England's population was on the increase much as the population of the United States is today. Beef and beef products were in great demand. The animals were used several years after maturity for draft purposes and then slaughtered. They often weighed over 2000 pounds with the meat having more coarseness than that of the modern type.

Early breeders associated with the breeding and improvement of the Hereford were the Ben Tomkins family, the Galliers, Tully, Skyremes, and the Haywoods, who resided in Herefordshire, England. The names of several famous Hereford animals bred about 1750 were "Spark," "Merchant," "Mottle," "Pigeon," and "Silver Bull." Credit is given to "Silver Bull," who was a member of the Tomkins herd, as being the prize Hereford of his day.

The first well known transplanting of Herefords from the British Isles to the United States did not take place until 1817. This first shipment, made by Henry Clay, consisted of two females and one male. Other early importers of Hereford cattle were Erastus Corning, Hohn Humphries, Hohn Merryman, C. M. Culbertson, and The Gudgell and Simpson Company. Among these imported Herefords were noted names such as "Anxiety," "The Grove 3rd," "Anxiety 4th," and "North Pole." Not until 1880 was the breed well established in the United States. The Hereford, being able to survive on mostly grass and heavy forage, was used to replace the buffalos and longhorns on the western plains.

Pedigree registration of the English Herefords was established in 1846 when Mr. T. C. Eyton of Wellington, England saw the need for the compiling of records on the genealogy of the breed. Today the English Hereford herd-book lists over twelve-hundred breeders. Yearly exports amount to three or four-hundred animals, which are used as seed stock throughout the world. These animals are somewhat larger than the American breed and produce a better quality hide, but are not well marked. Recently, Polled Hereford breeding projects have been undertaken in Herefordshire and are receiving the attention of many English beef breeders.

The American Hereford Cattle Breeders Association was established in 1881 in Independence, Missouri, with Mr. Charles Gudgell as the first elected secretary-treasurer. Between this time and the turn of the twentieth century many famous sires were bred and put to work on the western ranges. In 1893, Mr. Mossom Boyd of Bobcaygeon, Ontario, Canada, Mr. J. L. Torrey of Embar, Wyoming, and W. W. Guthrie of Atchison, Kansas began work on a breeding plan to produce a polled strain of Herefords. This was a single-standard strain, resulting from a cross of Here-

ford with Aberdeen-Angus or by mating a naturally polled bull, resulting from a Shorthorn-Hereford crossbred cow, and a purebred Hereford bull.

The first major step of progress in breeding the Polled Hereford was made by Mr. Warren Gammon of Des Moines, Iowa, who receives credit for founding the polled breed of cattle. His first move was to bring together all the naturally polled animals he could find. Such cattle were called "freaks" and were said to be abnormal. Among his first discoveries of naturally Polled Herefords were six males: "Giant," "Tony," "Wilson," "Variation," "Wallace L.," "Too Late," and seven females: "Lora," "Bluebell," "Duchess of Bedford," "Myrtie," "Taylor," "Olivia," "Charity," and "Beauty." "Giant" was the most prominent of the males used and is called the "Father of the Polled Hereford Breed." The Polled Hereford Breeder's Association was formed at Des Moines, Iowa in 1900, with the first entry in the purebred Polled Hereford Record being that of "Giant 101740," in the last days of 1901. In the year 1917 there were 31 Horned Herefords registered for every Polled Hereford. Today there are only nine horned animals for each polled animal. In South Carolina there are approximately 169 polled breeders and 233 horned breeders. During the year of 1952, there were approximately 1300 Polled Hereford animals from S. C. registered with the National Association.

Statistics prove that the Polled Herefords produce a higher quality product at a lower cost than do other beef cattle.

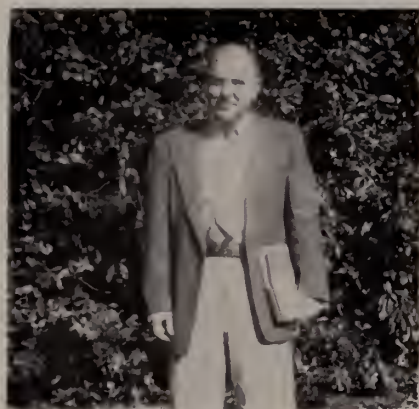
When it is time for the feeder to handle the cattle, he almost demands that they be dehorned or naturally hornless. With this feature prevalent, more cattle can be put in the barn or at the feed rack. They are less quarrelsome, have a quiet dis-

—continued on page 30

PROFESSional Personalities

by B. M. SANDERS, JR., Dairy '54

A familiar face in Long Hall to most students majoring in any phase of Agriculture is that of Mr. L. M. Bauknight who is Associate Professor of Agricultural Economics here at Clemson. Mr. Bauknight was born in Latta, S. C. in the year 1914 and moved with his family to a Pickens County farm when he was five years old. He attended grammar and high school at Easley where his father taught Agriculture. After graduation from high school, he enrolled in Clemson majoring in Agricultural



Prof. "FROSTY" BAUKNIGHT
displaying his friendly,
philosophical smile

Economics. After graduating from Clemson in 1935, Mr. Bauknight accepted a position with the Soil Conservation Service where he worked until 1941. While with the Soil Conservation Service he was project manager of a Land Use Project which comprised 35,000 acres of land in Georgia. In the meantime, in 1939, he studied and did graduate work at Iowa State College. He later received his Masters Degree in Agricultural Economics from Clemson.

With World War II being fought at this time, Mr. Bauknight was called into the Army in 1941. After serving four and one-half years in the Army, he was discharged and at present holds the reserve rank of Lt. Col. After his discharge from the Army, Mr. Bauknight again accepted his old job with the Soil Conservation

Service and worked with them for one year.

About this time, 1947, Clemson was in need of an Agricultural Economics professor, and Mr. Bauknight, wishing to return to South Carolina to live, accepted the position of Assistant Professor of Agricultural Economics here at Clemson. He was assigned to teach Farm Management and Agricultural Finance and at present is still teaching these subjects. Last year, Professor Bauknight was appointed Associate Professor of Agricultural Economics in the department at Clemson. An interesting fact in Mr. Bauknight's teaching here at Clemson is that although he commutes daily from Easley he has never been late for a class or missed teaching his class because of illness.

When asked where he received the nickname of "Frosty," Mr. Bauknight replied that when he was young he had hair which was almost white. In his joking manner, he said that this was when he had some hair to brag about.

As to Mr. Bauknight's personal life, he is married and has two fine young children. His wife is a native of Pickens County and a graduate of Winthrop in Home Economics. He is strictly an outdoor lover, and his hobby is that of hiking through the woods with his children. He is a member of the Methodist Church, teaches a young people's Sunday School Class, and is a member of the Lions Club.

We who are majoring in different phases of Agriculture at Clemson are very fortunate in having Professor Bauknight as one of our instructors. Any student who has had "Frosty" as an instructor will admit that he never enjoyed a subject any more than the ones he studied under Professor Bauknight. In his teaching, "Frosty" presents the practical side as well as the technical side of farm problems. Mr. Bauknight is well known around the campus and liked by everyone.

Who's who in the Ag. Build.? Have you met T. L. Senn? If not you should make every effort to do so. He is an Associate Horticulturist in the School of Agriculture. But his interest is by no means limited to the field of Horticulture. He takes a special interest in all students no matter what field. This was proved when he volunteered his time to be a freshman counselor. This duty consists of everything from talking over a problem "man to man" to offering a dry shoulder in time of need.



MR. T. L. SENN, a likeable Horticulture professor.

Mr. Senn's other extra curricular activities consist of advisor to Alpha Zeta, founder, booster, and adviser of the Hort. club, originator of the junior branch of The American Society for Horticultural Science, Advisor of the AGRARIAN, Community Council member, and president of the P. T. O. at Clemson. He also keeps records of all boys that graduate in Horticulture.

Mr. Senn was born in Newberry, S. C., received his early schooling in Newberry, and then got his B. S.

—continued on page 13

DANFORTH FELLOWSHIP

Inspirational and Educational

by BOBBY DUKE, A. H. '53

The boys who spent six weeks vacationing in Fort Benning last summer may recall my leaving a few days early to report to St. Louis, Missouri. I remember how glad I was to leave, but still I had no idea just how much was in store for me.

I was on my way to spend the most delightful and educational four weeks of my life on a Danforth Summer Fellowship. Paid for by the Danforth Foundation, the Fellowship has as its purpose "to help students make decisions—to enlarge their horizons—to broaden their contacts—to render guidance and assistance in attaining the Four Fold Way of Living."

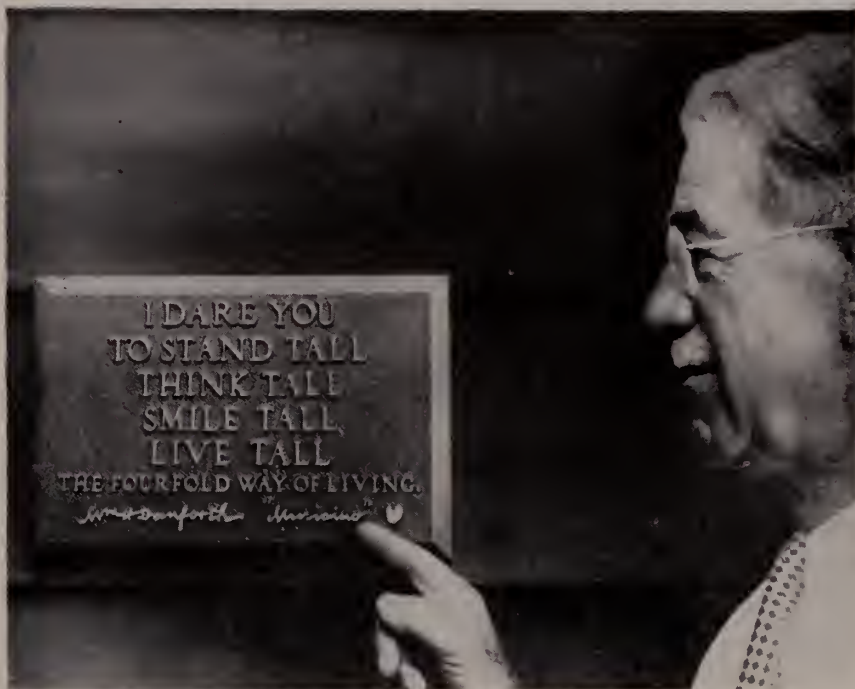
Let me resume my tale. I arrived in St. Louis early Sunday morning by train, ate breakfast downtown and proceeded to Washington University which was to be our headquarters for the next two weeks. I was one of the first to arrive and spend the day getting acquainted with the other boys as they came in from all parts of the United States.

Monday morning bright and early we were up for roll call by states and the first of several checks was handed to us. These kept coming at regular intervals so that we paid our own expenses as they came up.

By dinner we had travelled the forty-three miles to Gray Summit, Missouri, and the Purina Research Farm, where we spent the first three days of our trip like one big family. We slept and ate in the auditorium of the farm administration building—thirty-seven cots and a long table.

The farm was started in 1926 and has grown to a spread of 738 acres and a working crew of 100 men. Here all of Purina's Chows are tested and proven before going on the market. They are feeding every type of animal from beef and dairy cattle down to rabbits, mink, and quail.

We went through all the departments of the farm, making notes on what we saw and heard in the lec-



MR. W. H. DANFORTH pointing to plaque on which are inscribed the ideals upon which he built his great feed and cereal industry.

tures by the men who were working with the animals. One of the unique features of the tour as well as the whole trip—was that we never knew what was to come next. Mr. Sindecuse, who was in charge of us the whole time, would start out with a "Follow me" and we would move on to the next event. To illustrate the effectiveness of this stunt, on Monday evening we loaded up on a canvas-covered truck and started out over bumpy country roads. None of us had the slightest idea where we were going, so when we ended up at the Meramec River for an old-time "birthday suit" swim, you can imagine our surprise and delight.

Wednesday afternoon we returned to St. Louis, where we were to spend the remainder of the first two weeks. The day started about seven, according to the speed with which the boys could dress and eat breakfast. We had to be at Checkerboard Square, home of the Purina offices, at eight-thirty and the trolley ride across town took just about an hour.

You should have seen the surprised look on the faces of the natives of St. Louis when we gave our seats to ladies who were standing. Seems that it wasn't customary at all.

Again in St. Louis our program was varied with each new event coming as a surprise. We heard men from every department in Ralston-Purina's vast organization speak on their work and many other topics. We learned the history of the Purina Company, how it grew from a one man organization to a million dollar industry. Dr. H. J. Smith told us of the development and work of commercial research in the field of nutrition. We toured the four stories of laboratories and learned how each feed ingredient is checked and rechecked before going to the experimental farm for proving. The methods of selecting, training, and promoting personnel was explained to us. Mr. H. C. Shaefer gave us a condensed series of lectures on ani-

—continued on page 21

CLEMSON'S



EARL G. WRIGHTENBERRY
Burlington, N. C.

Earl WRIGHTENBERRY, an Animal Husbandry major from Burlington, N. C. Earl is a big raw bone boy who came down out of the hills to help strengthen the Clemson Football team. He has played three years of good football. Earl had the distinct privilege of being chosen on the All-State football squad. Earl is planning on coaching or opening a beef cattle farm up in 'them' hills.

J. R. Tolbert is a Dairy major from Anderson, S. C. He has gained valuable experience and know how while growing up on a dairy farm. Besides being a company commander, Robert is president of the Dairy Club, a member of the "Y" Cabinet, and has served on C. D. A. Last fall he was a valuable man on the Dairy Judging Team. Recently Robert was selected for Who's Who In American Colleges and Universities. He is a member of Alpha Zeta and the Senior Platoon.



J. R. TOLBERT
Anderson, S. C.

Peter McCall is an outstanding student in Agronomy. Peter's home is in Hartsville, S. C., and it was while working there at the Coker's Pedigreed Seed Farms that he decided to become an Agronomist instead of a mechanical engineer. Peter has been elected into Alpha Zeta and Phi Kappa Phi, the Agrarian staff, the Pershing Rifles, the "Y" Council, and the Agronomy Club. Peter is also a company commander.

Hunting and fishing are Peter's sports, when he can find the time.



PETER L. McCALL, Jr.
Hartsville, S. C.



R. LEE BIVINS
Atlanta, Ga.

Lee Bivins, is an Animal Husbandry major from Atlanta, Ga. During the war Lee helped his grandfather on the farm and it was while working there that he decided to choose Animal Husbandry as a career. He attended the University of Georgia for three quarters before coming to Clemson. At Clemson he has become a member of the Tiger Brotherhood, the "Y" Cabinet, Alpha Phi Omega, the Block and Bridle Club, and is now president of the Baptist Student Union.

Camping in the mountains is Lee's favorite pastime, but he seems to enjoy serving on deputations to other colleges.

James B., "Bulldog," Crawford is an Animal Husbandry major from Kelso, Tenn. Barclay has played more ball than any member of the graduating class. He has played three years of first string ball. Coach "Bear Bryant" of Kentucky termed Crawford "the hardest man to move that my team has run up against this year." "No one will run a play over him . . . The only game he hasn't started in two years on defense was the P. C. game of '51 when he was out with an injury."

He plans to own a cattle farm in the near future.



BARCLAY CRAWFORD
Kelso, Tenn.

SENIORS



JOHN B. STANLEY
Conway, S. C.

R. Thornwell Dunlap is a Dairy major from Clinton, S. C. Most of us Clemson Students know him best as "The Parson," because he is the Regimental Chaplain. His choice of extracurricular activities cover a wide and varied range. He is president of P. S. A.; Secretary of the "Y" Cabinet; Treasurer of Tiger Brotherhood, and a member of the Senior Platoon, and Scabbard and Blade. As a member of the Clemson Dairy Judging Team this past fall he won first place in judging Holstein cows. After his Army duty is over he hopes to start a dairy farm.



R. THORNWELL DUNLAP
Clinton, S. C.

John Stanley is a Dairying Senior from Conway, S. C. John has taken a great interest in the "Y", the Presbyterian Church, as well as in the Tiger Brotherhood, Alpha Zeta, the Dairy Club, and the Agrarian staff. John has been president of "Y" Cabinet and was voted Mr. Tower by the Clemson Tower staff. He is also president of the State YMCA. John is the plans and training officer on the Second Battalion staff.

John's favorite pastime is "fellowship" which he thoroughly enjoys. In Dairying, John thinks there is nothing more wonderful than the cow.



WILLIAM F. STEWART, JR.
Fountain Inn, S. C.

William F. Stewart, one of Professor LaMaster's hard working Dairy majors can be found almost any afternoon either making or selling ice cream, or doing some other job around the College Creamery. Bill is adjutant on the Second Battalion staff and is very active in the Dairy Club, Presbyterian Student Association, Scabbard and Blade, and Tiger Brotherhood; besides being Co-Editor of the Agrarian, Bill has been to Camp Miniwanca on the Danforth Scholarship and has been selected for Who's Who in American Colleges and Universities. At the end of his Junior year he was honored by receiving the Borden Scholarship Award.



OTIS B. KEMPSON
Kingstree, S. C.

Otis B. Kempson, "The Bug," is one of the friendliest boys on the Clemson Campus. He has played two years on the first team at the position of end. He has been playing baseball with the Tigers for the last two years. He served on the pitching staff as well as playing in the outfield. He has made honorable mention two years of his football abilities. He was on the first team when the team made their trip to the Gator and Orange Bowls, and "Is probably the fastest man on the squad." Otis plans to go to work with some feed company after graduation.

Gary E. Byrd, "The Bull Wrestler," hails from the little town of Hartsville, South Carolina. He came to Clemson on a football scholarship, and has proved that he was worth all of their troubles in getting him. Twice he has made honorable mention for the All-state squad. He has played in the Orange and Gator Bowl games. "Gary is an exceptionally fast man for his size . . . He's strong enough to be one of the Tiger's all-time greats." He has been an active member of the Block and Bridle Club. He has started a herd of grade cattle at his home.



GARY E. BYRD
Hartsville, S. C.

—continued on page 24

The Rural Church

by Joe O'Cain, V.A.E. '54

What are the rural churches doing? Believe me, they're at no standstill in South Carolina. According to Clemson's G. H. Aull of the Economics Department, "The rural church is becoming more and more a part of the community."

The rural community today is not playing out of the picture by no means. With the increase of agricultural security, education, and appreciation of country life, many farm settlers are making a more beautiful and progressive community.

With "brotherhood" uppermost in the minds of Americans today, however, there is a slight trend of country churches to combine with city churches. In communities located near a city, the country-town relationships are felt more strongly, and many church enthusiasts are building new churches in the country, perhaps a couple miles outside the city, where both the town church workers and the country church workers unite in one central church to worship together. This idea of "church consolidation," no doubt, receives criticism just as the consolidation of schools in our state. In communities situated many miles from a city, the trend is to improve and enlarge their own church and recreation facilities. Many community "old red school houses" have been converted into

very useful and attractive community centers.

The church and community is rapidly becoming part of farm life. The various Home Demonstration Clubs, Women Community Councils, and Church and Youth Organizations have played a great part in the rural community.

Agencies of the government appreciate and feel the importance of good rural communities, and ministers and farmers themselves are better trained "for the job."

The Highway Department and other government agencies are steadily improving roadside appearances by planting grass, shrubs, and trees. The farmer, realizing the value of beauty and comfort more than ever before, had added much to the appearance of the farm home. One finds more livable farm tenant homes in South Carolina now; more fences are being whitewashed, more farm home owners have added running water and bathroom facilities.

Perhaps state agricultural colleges and universities are doing much to promote this interest and improvement of country life. Each year, more and more agricultural workers, teachers, and ministers are graduated. The rural community needs these young graduates even more than the city! These persons are



A beautiful example of rural community progress—the Union Memorial Church in Fairfield County, S. C., made from the county's famous Winnsboro Blue Granite, stands as an undying trademark of a working community of farm folk. —(Photo Courtesy Clemson College Extension Service)

working toward a better community, a better church, and are stimulating participation in better community development activities. Today, more stress is put on community leadership, good government, agricultural and world missionary enterprises.

There's a big job to do—the farm worker, the town worker and the preacher must work hand in hand!

TRUCK FARMING & PLANTS IN SEASON

REGISTERED HEREFORDS

Walter P. Rawl & Sons

Packer of

"CAROLINA PRODUCTS"

Gilbert, S. C.

Telephones: 3645 Lexington & 1013 Gilbert

PRAYER IN APRIL

by Joe O'Cain

If
He called
I could not answer,
For April has me hung
Beneath her silken dress,
with love!
And Earth's sweet womb has
bled
For help—
And rivers and hearts have
overflowed—
And God's first temples o'er
me rise
Like some great gem I cannot
reach . . .
A wisp of new-born beauty
Trips across the azure sky;
God, drench me more!—
And do not call just now . . .

THE BATTLE AGAINST WEEDS—

When Will We Win?

by C. L. MULLWEE, V. A. E. '54

For ages the farmer's most persistent and costly enemy has been weeds. Since the beginning of agriculture man has waged a ceaseless battle against weeds which have competed with his crops for soil nutrients and soil water, thereby lowering the productivity of his agricultural enterprises. Man began his battle by using crude sticks and even his hands, to eradicate the weeds from his small garden plots. As time progressed other instruments were invented, but they too proved inadequate because of the required close attention and labor. These limitations greatly impaired the crop acreages a farmer could efficiently handle, and as a result, man, in his never ending search for the improvement of the methods of accomplishing his tasks, has made many remarkable discoveries in the field of weed control.

As a result of intensive research, there are on the market today many chemicals which are effective in controlling unwanted vegetation. Even though none are absolutely perfect, they have greatly reduced the labor required to control the weeds in many crops.

Probably the leading chemical weed controlling agent is 2,4-D. The ester of this chemical is most commonly used as a water-emulsion spray. 2,4-D is a selective weed killer in that it affects only broad-leaf plants. Grasses are highly resistant, although many individual exceptions to this generalization are known. This herbicide affects plants in such a way as to cause both an increase in the respiratory rate and growth rate. The plant is said "to grow itself to death." However this is not always true, for metabolism is brought to an abrupt halt when the chemical is applied to some plants, and they proceed to wilt and die very rapidly.

Most herbicides may be applied as a pre-emergence spray - application after planting, but before sprouting; or as a post-emergence application to the growing crop. In South Caro-

lina the value of pre-emergence spraying has been successfully demonstrated on corn. 2,4-D was applied at the rate of two lbs. per acre. This type of application is most successfully used in connection with large seeded crops whose seed can be placed relatively deep in the soil so as to be below the toxic layer created by the herbicide. Post-emergence spraying of corn has given excellent control of weeds; however, grasses must be combated by other means. The post-emergence sprays should be applied to corn to control weed growth during the first four to eight weeks of crop growth.

Although there may be slight damage experienced from the use of 2,4-D, the loss is generally negligible when compared to the savings realized from the increased yields resulting from control of weeds. The larger yields of corn may also result from the fact that fewer feeder roots are cut by cultivation.

In this state 2,4-D has been used successfully on corn, sorghum, fescue pastures, lawns, and small grains, that are not doublecropped with some legume, in the control of coffee weed,



Close up showing spray nozzle used for applying weed control material. —(Photo Courtesy Clemson College Extension Service)

cocklebur, morning glory, bull nettle, common ragweed, bitterweed, wild onion and many other broad-leaf plants.

Another popular herbicide is a mixture of 2,4-D and 2, 4, 5-T which is sold under the trade name of "Brush Killer." This mixture is highly effective against sprouting stumps, small bushes, and hard to kill legumes, such as kudzu. For effective control of stumps and trees

—continued on page 24

SANDERS' DAIRY

"The Best Always"

ALL PRODUCTS PRODUCED AND
PROCESSED LOCALLY.

Phone 1240-M2

ORANGEBURG, S. C.

DID YOU LOSE MONEY *because of nematodes?*

by DON DUNLAP, Horticulture, '54

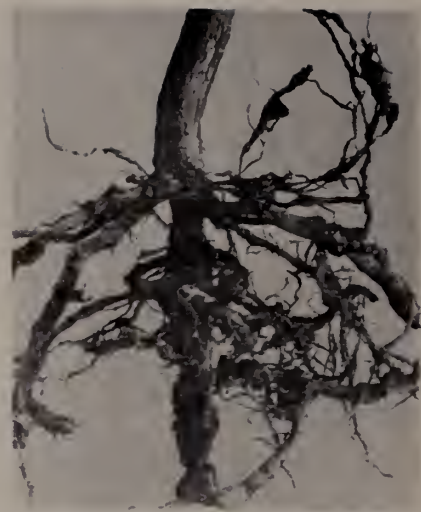
Did you realize that South Carolina farmers lose millions of dollars every year due to destruction by root knot and other nematodes? Practically all the commercially grown crops in the State are damaged by nematodes, but not until recent years have Agriculturist recognized the extensive damage caused by these eelworms. Extensive damage is usually noted on tobacco, truck and garden crops.

Material and application equipment used to control nematodes have reached a point of development where more widespread usage is expected, especially on crops of high value per acre and on crops where heavy damage usually occurs. Probably a wider use of these control materials will be used on family gardens which are usually damaged severely by an attack of nematodes.

The root knot nematode is probably the most significant form of nematode because it affects hundreds of important crops. This eelworm enters the roots and remains in one place in the root for its entire life. This injury causes galls or knots

to form which distinguishes it from all other nematode injury; however these knots should not be confused with legume nodules which are caused by beneficial nitrogen-fixing bacteria. Symptoms of nematodes are, lack of vigor, stunting and wilting. Severe cases may cause defoliation and death. Root knot is a common source of injury to tobacco crops in the state. Also, they affect corn, cotton, vetch, cowpeas, lupine, clover, alfalfa, and several of our native weeds. Okra is a vegetable crop that may be used to indicate the presence of root knot in the soil; also root knot nematodes seem to live better in a light sandy soil.

Meadow nematodes are second in importance because they cause damage to the tender feeder roots. These nematodes enter the roots and move through the cell tissue causing the roots to turn brown and rot. The destruction of these tender feeder roots cause severe stunting of tobacco, corn, cotton, sweet potatoes, some vegetables, and many native weeds.



Root-knot of cotton. The female nematode burrows into the root causing knots and cutting off movement of water and nutrients. (Photo Courtesy Botany Department)

Stubby-root nematodes, while of lesser importance, cause serious damage to tomato, sweet corn, and lima beans. Squash, beans, cucumbers, and cabbage are crops that may be injured, but they are somewhat tolerant to the stubby-root nematodes. Strawberries and lettuce are highly resistant. Plants thus attacked are deprived of a normal root system and become stunted due to a small compact root system with many stubby branches. In many instances plants show signs of starvation, even though an ample supply of fertilizer and moisture is present.

The string nematode has been found in fields scattered over the Coastal Plains. This nematode feeds mostly on the root tips and causes stunting of the plant. It seriously damages corn, soybeans, cotton, sweet potatoes, and many other crops.

Yield losses up to 50% have been estimated in cotton fields due to the spiral nematode. Research studies indicate that this nematode may cause severe root injury and stunting of cotton.

There are other nematodes which are known to cause injury to certain crops; however they are not of wide importance.

An organic compound which has shown very promising results in the

—continued on page 13

Over A Half Million Stock Farmers Use Silos The Reason:

Silage is the cheapest known substitute for both pasture and hay, and is the cheapest stock food that can be produced on the farm.

Southeastern Silo Co.

640 SIXTH ST.

PHONE 2-8378

AUGUSTA, GA.

Grassland Farming In South Carolina

The acreage devoted to grassland farming in South Carolina in 1952 was 4,301,367 acres, according to a summary of estimates submitted by county agents and summarized by the Clemson Extension Agronomy Department. Hugh A. Woodle, leader, Clemson Agronomy Extension Work, points out that these estimates are the best and only information available on much of the acreage.

Of the total acreage reported 1,169,395 acres were planted to small grains, of which 881,100 acres were planted to oats; 185,475 acres were planted to wheat; 47,050 acres to barley; and 55,770 acres were planted to rye.

A total of 562,115 acres were devoted to annual grazing crops, of which 350,920 acres were used for annual winter grazing crops and 211,195 acres for summer grazing.

Other acreages included improved permanent pastures, 895,737 acres; unimproved permanent pastures, 1,333,900 acres; supplementary grazing, 80,980 acres; hay, 536,737 acres; and grassland crops harvested for seed, 227,116 acres.

Mr. Woodle explains that the acreage listed as improved permanent pasture includes only acreages which were fenced and on which at least one or more recommended pasture practices had been carried out. He adds that the total grassland acreage does not include acreages planted to corn for grain or silage, sorghum for forage or silage, or corn or sorghum with velvet beans for winter forage.

"As small grain acreage is considered as grassland farming acreage," he states. "Many livestock farmers clean up crop residues by running cattle on harvested fields, but this acreage is not included. Also, in the rotation of crops it is estimated that 604,613 acres were double-cropped, and this acreage is included only once in the actual acreage devoted to grassland farming as shown in the total. South Carolina farmers are certainly to be congratulated on the outstanding progress being made in grassland farming as shown by the summary," he adds.

SPRING 1953

FARMERS OF GREER AREA USE

Old Reliable Fertilizer

FOR BIGGER AND BETTER CROPS

Manufactured by

Greer Guano Co.

Greer, S. C.

PROFESSIONAL PERSONALITIES

continued from page 6—

at Clemson. He attended the University of Tennessee where he planned to study Botany. This was cut short by World War II. He then entered the Navy where he received the rating of Lieut. J. G., he still holds a reserve commission. While in the Navy he attended schools up and down the East Coast and toured the Orient. Mr. Senn married a girl from Anderson in 1939 and now has a family of three boys. His plans for the future are to continue teaching here at Clemson.

Other than teaching at Clemson, he does research work on Aromatic Tobacco for Duke university during the summers. He has worked with the U. S. D. A., and worked with and wrote a bulletin on peaches in S. C.

In his untiring efforts to help students, he stresses to them HOW to think and not WHAT to think. The AGRARIAN staff salutes Mr. Senn, Horticulturist, research worker, and student helper.

Friends of A. E. Schilletter, early Horticulturist of the extension Service of Clemson College, will be pleased to know he is recovering after a recent illness. Schilletter was able to attend the National Peach Council Meeting in Spartanburg last month.

DID YOU LOSE MONEY BECAUSE OF NEMATODES

continued from page 12—

control of nematodes is DD. For a small area, DD should be applied at the rate of one gallon per 100 square yards. Place the DD in a furrow about 8 inches deep and cover it with soil, allowing the soil to be undisturbed for about 2 or 3 weeks. At seeding time prepare and seed in the usual manner. For large areas DD should be applied by a broadcaster applicator at the rate of 20 to 30 gallons per acre as shown in the picture.

Other ways of controlling nematodes are by the use of Dowfume 40, Soilfume 40-60, Iscobrome 40, and Bromofume 40 at the rate of one gallon per 100 square yards.

A good farm practice to use for the control of nematodes is crop rotation. Plant crops which are resistant to nematodes in the rotation plan.

Other ways of controlling nematodes may be accomplished by adequate fertilization and proper cultivation to keep the plant in a healthy, vigorous, growing condition.

The agriculture department has announced that it will support grower prices of 1953 crop cotton at a national average of at least 30.80 cents a pound, gross weight for the base grade of middling seven-eighths inch cotton.

THIRTEEN

MORE MILK

by JACK WORKMAN, *Dairy '54*

• THROUGH ARTIFICIAL BREEDING

South Carolina is a deficit milk producing state in spite of the fact that it has certain natural advantages for milk production. During 1952, South Carolina imported more milk than was exported. According to statistics that were recently released by the Bureau of Dairy Industry, a dairy cow that produces only 5,000 pounds of milk a year seldom makes a profit for her owner. The average milk production per cow in 1950 in South Carolina was only 3,810 pounds. It can easily be seen that there are many cows in the state that are losing money for their owners. If the dairy industry in South Carolina is going to be profitable for many farmers it is essential that these low producing cows be replaced with high producers.

South Carolina has possibilities of becoming a great dairy state. Our climate permits a grazing program which cannot be equaled by the northern states. The mildness of the climate also makes it possible to get along without the expensive shelters used in colder climates.

The future of the dairy industry in South Carolina depends on efficient production. The keys to efficient production are correct feeding



LEE'S HILL LUCKY STRIKE—A Brown Swiss sire in the Clemson Bull Stud that is being used in the South Carolina artificial breeding program. Lucky's six daughters average 14,768 pounds of milk, 3.87 per cent butterfat and 571 pounds of butterfat. This is an average increase of 3,739 pounds of milk and 133 pounds of butterfat over their dams.

and management, and the breeding of cows with the inherited ability to produce large amounts of milk.

Obtaining improved inheritance through artificial breeding will mean

better living for South Carolina farmers and dairymen. Never before in history has an organized program had so much influence on dairy cattle improvement as has been brought about by artificial insemination since 1938. The spreading of the influence of great bulls will mean as much to farmers as hybrid corn and crossbred hogs. All three developments deal with genetic improvement. Dairy sires are now being proved for their transmitting ability at much younger ages through artificial breeding.

There are fifteen artificial breeding cooperatives in South Carolina that buy semen from the Clemson Bull Stud. The first cooperative breeding association in South Carolina was the Spartanburg County Cooperative Breeding Association, started in May, 1945. Since that time the following cooperative breeding associations have been formed; Orangeburg, Bamberg, Coastal Breeding Cooperative which includes Beaufort, Hampton, and Jasper counties; Greenville, Laurens, Malboro, New-

*Fertilizers – Farm Supplies – Garden
Supplies – Seed – Checkerboard Feeds*

Trotter Distributing Co.

PHONE 2-1042

1411 ASSEMBLY STREET

COLUMBIA 1, S. C.

berry which also serves part of Saluda county, Oconee, Anderson which also serves Calhoun county, Richland, Sumter, Williamsburg and York. It is estimated that in 1952 the technicians in these cooperatives inseminated more than 15,000 cows artificially.

The bulls now assembled at Clemson are not a miscellaneous lot of well-bred individuals. These bulls have been purchased and bred as related individuals to form two or three distinct families in each breed. A small group of the best females of each family has been reserved for special matings within the family for the purpose of developing and maintaining the required relationships. The value of having several families in a breeding program is to obtain the increased vigor and producing ability resulting from having two sets of inherited factors available when two families are crossed, instead of only one set that results when close relations are mated. When three families are used in the program an even wider assortment of inherited factors become available to work for higher production and greater vigor of the resulting individuals.

There are now 11 Guernsey bulls in the stud representing the Holliston, Fern, and Butterfat families.

The Brown Swiss breed is represented by the Jane of Vernon, and the Duke Dan of Elmhurst families. There are three bulls in each of the two Brown Swiss families.

The Holsteins are now organized on a two family basis with plans for adding a third family within a few years. The Carnation Holstein family has been developing since 1938. A Bureau family of the Holstein breed was started in 1948 and is now represented by five bulls on loan from the Bureau of Dairy Industry. These bulls were produced in the thirty year old United States Department of Agriculture dairy cattle breeding project located at Beltsville, Maryland in which nothing but proven sires have been used.

The Jersey breed has not been organized on the family basis but will be supported by the use of unrelated proven bulls.

It will not be long before semen representing all the families of each breed will be shipped to the county cooperatives on each semen shipping

SPRING 1953



Cows Love Suni-Citrus Pulp

Suni-Citrus is rich in milk-making units, brimming with bovine health and happiness. That's why—

"They Moo For More"

Suni-Citrus Products Co

HAINES CITY, FLORIDA

Sales Agent: ASHCRAFT-WILKINSON COMPANY, ATLANTA, GEORGIA

day, Monday, Wednesday, and Friday each week. When this is done farmers and dairymen will be able to follow a definite breeding program.

The use of superior sires is not the only advantage of artificial breeding. This plan does away with the expense of keeping a bull on the farm and permits the addition of one additional cow in the dairy herd from which to sell milk without additional feed cost. A Clemson Dairy Department study shows that the yearly cost of feeding, bedding and caring for a bull exceeds \$300. This expense plus the investment in the bull and housing and fences makes the keeping of a bull quite an expensive item. The danger of accidents and the danger of spreading diseases is greatly reduced by the use of artificial breeding.

Since artificial breeding is relatively new in this state it is impossible to determine the results until the artificially conceived daughters are old enough to prove themselves.

In several of the larger dairy states considerable information is now available on the results of artificial breeding.

A recent survey made in New Jersey showed a 14 per cent increase in butterfat and a 9.3 per cent increase in pounds of milk produced by the first generation of artificially conceived daughters over their dams.

A similar survey made in Wisconsin showed a 12 per cent increase in butterfat and a 8.4 percent increase in pounds of milk produced by the first generation of daughters over their dams.

The above statistics prove that milk production can be increased through artificial breeding. Similar results can be expected from the breeding program that is being practiced in South Carolina. BREED TODAY FOR BETTER COWS TOMORROW.

FIFTEEN



BETWEEN T



DR. POOLE, professors DANION and RITCHIE line up for some of the Block and Bridle barbecue at the Bull Sale.

Block and Bridle Activities

BARBECUE AT BULL SALE

The Block and Bridle Club had a barbecue dinner at the annual bull sale on the twenty seventh of February. The dinner started at 1 p. m. and lasted until 2:30 p. m. The profits went towards the expenses of the club.

MANY NEW MEMBERS IN CLUB

The Block and Bridle Club isn't worried about losing their title as one of the biggest and most active clubs on the campus, because they have recently taken in thirty-two new members into the club. The formal ceremonies were instituted in March.

PRACTICE IN SHOWMANSHIP

Students of the A. H. Department have been practicing to compete in the showmanship contest which is being sponsored by the Block and Bridle Club. There are about ten students who have their sights set on the beautiful trophy which will be given to the winner.

RELIGIOUS EMPHASIS WEEK BIG SUCCESS

Clemson College was honored to have the Rev. R. Wright Spears, President of Columbia College, as the main speaker for the protestant convocations. The services were held from eleven until twelve each day Monday through Friday the 13th.

The Catholic convocations were led by Father James Maguire, director of the Newman Foundation at Wayne University, Detroit, Michigan.

SIXTEEN

ALPHA ZETA NEWS

The South Carolina Chapter of Alpha Zeta recently elected A. E. DeWitt, agricultural engineering senior from Darlington, S. C. as the new chancellor to replace J. P. Fulmer, who graduated in February. At this meeting L. C. Lawson, agronomy senior from Darlington, S. C. was elected as Censor to replace J. D. Early who also graduated.

The Chapter has begun work on the possibility of re-establishing the bell system in Long Hall. Dean Cooper and the service department are giving their fullest cooperation to Alpha Zeta in the revival of this system.

KAPPA ALPHA SIGMA EXPANDS

As the Agronomy Club looks forward to the new semester there is much interest centered around the National Crops Judging Contest. Laurie Lawson, chairman of the National Crops Judging Committee, is outlining a program by which the agronomy club will direct proceedings and make reports on winners at the judging contests to be held in the midwest this spring. The club is also planning to have a crops judging team to enter the national contests.

At a recent meeting nine new members were formally initiated into the club following a week of informal initiation. The new members were as follows: W. C. Dailey, of Blenheim; C. B. Elmore, of Bishopville; J. A. Galloway, of Hartsville; W. I. Molony, of Sullivans Island; B. L. Walpole, of Johns Island; J. L. Flake, of Swansea; and E. M. Rast, of Cameron.

Also during this meeting new officers were elected. They are as follows: president, G. R. Griffing, of Leesville; vice-president, R. E. Poston, of Hyman; secretary, A. D. Owens, of Greer; treasurer, J. L. Maxwell, of Hartsville; program chairman, E. M. Rast of Cameron; and social chairman, J. A. Galloway, of Hartsville.

DAIRY CLUB HAS 32 MEMBERS

Right in the swing of a busy year, the Dairy Club is enjoying one of its more prosperous years. When the call went out for new members at the first of the year there was a good turnout of the new freshmen.

During the year the club has had numerous speakers who informed the members on subjects not only pertaining to the dairy field, but to subjects related to other fields as well.

At present there are thirty-two members in the Dairy Club, which represents about sixty percent of all students majoring in dairying. The club is planning a social which will be held sometime in the spring. What better refreshment could be served than some delicious ice cream?

THE AGRARIAN

FURROWS



ASAE HEARS MR. WADE

Mr. Douglas E. Wade, a graduate of the University of Wisconsin in wildlife management and, at present, a member of the South Carolina Fish and Game Dept. at Clemson, was the principal speaker at the February meeting of the Clemson branch of the American Society of Agricultural Engineers.

Mr. Wade gave an interesting account of the work being done toward game conservation around Clemson, some of the plans for the future, and the advantages of the conservation program as an aid to a great recreational facility. He pointed out that cover, protection, and food supply were the limiting factors of the game supply and told what the game department at Clemson was doing to provide these. He stressed the need for better cooperation between departments in order that land might be used for more than one purpose.

'Y' CABINET MAKES REPAIRS

The 'Y' Cabinet has been working in their spare time on the 'Y' cabin. The cabin is used by many groups of students and socials, as well as, by adult groups.

PLATOON MARCHES IN MARDI GRAS

The Clemson College crack drill team had the distinct privilege of drilling second in the Mardi Gras Parade. The platoon worked hard and long so that they would be up to perfection for this celebrated occasion. We are proud of our Senior Platoon for the fine name they made for our school while performing in New Orleans, and the School of Agriculture can boast of having many boys in the drill platoon.

AG. CHEMIST PROF. LEAVES

Professor W. L. (Wild Bill) Mauldin has gone to the University of North Carolina to take graduate work. Professor Mauldin has been teaching Organic Chemistry for many years at Clemson College. He is working on his Doctorate at the University.

Officers Elected For F. F. A.

The Clemson collegiate chapter of the Future Farmers of America recently elected the following officers to serve for the remainder of the current semester: president, J. D. Beam, senior of Cherryville; vice president, H. N. Padgett, junior of Saluda; Ronald North, junior of Stockton, Ga.; treasurer, D. W. Howe, senior Hickory Grove; reporter, Edwin Nolley, junior of Cooleemee, N. C.; and sentinel, N. A. Myers, junior of Olanta. The faculty advisor for the group is Mr. J. B. Monroe.

SPRING 1953

New Soil Testing Laboratory Installed To Serve Farmers

For more than twenty years the Agronomy Department of the South Carolina Agricultural Experiment Station at Clemson College has tested the soil for farmers and others. The demand for this service has grown, and each year more soils of the individual farms are tested for plant food and lime requirement. It has become necessary to expand the facilities of the Soil Testing Laboratory and to have a full-time supervisor.

Dr. H. G. Allbritten, born and reared on the farm, with many years of farm experience and a former Extension and Research Agronomist in other states, was selected to develop and supervise the activities of the new and modern Soil Testing Laboratory at Clemson. He received the B. S., M. S., and Ph. D. degrees, respectively, from Murray State College, University of Kentucky, and Penn.-State. His specialized fields, as related to crop production, are Soil Chemistry and Soil Fertility.

Dr. Allbritten extends an invitation to farmers, gardeners, home owners, and others interested in agriculture to avail themselves of this free service by sending soil samples to the laboratory for analysis and advice.



Dr. Albritten, head of the soil testing lab, is shown testing a soil sample with the calorimeter. (Photo Courtesy Clemson Extension Service)

SEVENTEEN

GUEST EDITORIAL

continued from page 3—

both experience and experiment already show us that therein lies a splendid frontier for development. Some irrigation has been started in practically all counties. And I have yet to find a farmer who does not like it.

We know very little about all of the angles of irrigation for this area. We know in most cases it pays and pays well. Yet in some cases, even at Clemson under careful experiment, it has not paid in dry years when used on Bermuda pasture, for instance. Yet, on corn it has paid handsomely in four years out of five. And that brings up other elements, fertility, for instance. Added water must have the plants and the fertility to work with. So, as we approach this new farm practice, we have a new agriculture to learn. And learn it we will! For drought's dreadful toll from our fields must be stopped, or as nearly so as we can do it economically.

We have abundant water, usually when we don't need it, but when the droughts of summer strike, our water has lost most of its abundance. But we do have it in abundance at times. That calls for storing and conserving water. Through good practices we can so slow it up that we will have a better distributed run-off than we have been having. But after all of these things are done, we will still need a lot of water for maximum yields when the protected drought strikes at the critical time. And to have the water then, when it will really pay off, we face the need for developing a vast system of water storage over South Carolina. We already see this started. I was in one county the other day where they told me their bulldozers were booked up for two years ahead building farm ponds, principally for the storage of irrigation water.

The past summer I saw fields of corn on five farms over the state where they had planted for over 100 bushels per acre. Where they irrigated, they got it. But the unirrigated part of these very same fields came up with from nothing at all to about 10 bushels of nubbins per acre.

I saw irrigated watermelons in Chesterfield producing a bountiful harvest, while those not irrigated right beside them made nothing at all. And in Spartanburg, Lexington, Cherokee, and Chesterfield counties I saw irrigated peaches make a bumper harvest of quality fruit, while non-irrigated peaches right by them made a sorry crop, some of which were not worth harvesting.

In Abbeville, Newberry, and Richland I saw abundant grazing last summer where irrigated, while the summer sun had burned adjoining areas into a sorry spectacle, where cattle got exercise, but nothing to eat.

And so it goes. Folks, let's watch this thing called supplementary irrigation. It carries the

EIGHTEFN

FOR THOSE WHO

CARE WHAT THEY WEAR!

WATCH

**For Our Opening
In Our New Location!**

**COMPLETE FORMAL
RENTAL SERVICE!**

**"YOUR PATRONAGE IS
SOLICITED AND APPRECIATED"**



CLEMSON — SENECA

greatest potential we have on the farms. For, with it, we can largely insure the harvest. And having it, we have a new agriculture to learn as to spacings, fertilization, varieties, methods, etc. For all of our present customs and practices were predicted upon droughts. We adopted what would stand drought best and still give us at least some harvest. Now, when we rub the threatening drought out, we have a new agriculture to learn. And it holds out many promising vistas.

FARM AND HOME WEEK AT CLEMSON

The annual South Carolina Farm and Home Week will be staged at Clemson during the week of August 17-22, according to an announcement from Dr. R. F. Poole, president, Clemson College. Thos. W. Morgan, assistant director, Clemson Extension Service, will again be general chairman of the Farm and Home Week Committee. The event is expected to again attract thousands of people from all sections of the State.

A smart man will learn from his own mistakes while a wise man will learn from other peoples mistakes.

THE AGRARIAN



AGRARIAN PHILOSOPHY

By
THE EDITORS



Why Study Agriculture?

WILLIAM F. STEWART — Dairy '53

When a student enrolls at Clemson and chooses his major field of study in the School of Agriculture, he is stepping into a wide, varied and diversified field of science. Agriculture is the only field in which a student can study the basic fundamentals of life and complete the requirements for a degree in the same progress. Agriculture is basic because every process of life can be traced back to it. The textile student, for example can spin miracles with the fibers, but very few of these students have any conception of the processes that are involved in producing these fibers.

The school of Agriculture can be divided into two main fields—the field of plant science and the field of animal science. Since the curriculum in Agricultural Engineering is jointly administered by the Schools of Engineering and Agriculture, it is not to be included in this article.

A study of Agriculture is basic because in each department of the School of Agriculture there's at least one basic required course in plant and animal science. Here the student is taught the structure, composition, and function of the most simple members of the plant and animal kingdoms. Practically every other course in a student's curriculum is based on these two courses.

Next all students of agriculture must study the science of genetics. Here the variations and differences that occur in plants and animals are investigated and accounted for. Is anything else more basic to any way of life? Most departments go a step further and require a course in breeding that relates to the student's particular field of study. Breeding is the art of putting the science of genetics into action so that plants and animals can be made to serve the world more effectively.

Persons who doubt the importance of agriculture as it relates to our lives should remember that without agriculture there would be no food. Without life—there would be nothing!

Students of agriculture realize that they are missing some vital points that all college men should have. The world of human relations is becoming more and more important. Even the most remote farmer can no longer live by himself and deal with no one else. Here at Clemson, a student of Agriculture seldom has the opportunity to take more than one course relating to these fields. Then too, there is a definite lack of educa-

History For Posterity

RONALD M. NORTH, VAE '54

WHO WILL DO IT? Why of course no one will if there is any work involved. Asking for volunteers to do really hard work that would require brains as well as brawn will yield about the same response and enthusiasm as you would expect to get if you were to ask a stubborn old mule to plow for you when it wasn't in the notion to do so. But, when the chips are down there is usually some man who will latch on to the task and do a good job, especially if he can get just a little cooperation from his fellow man.

It has recently been made known to me that one of these jobs has been discovered and worked on by one who is interested in improving the future of agriculture by relating the past to the present and the future. A task like this pays only one salary—sweat, troubles, problems, and no immediate reward, perhaps none ever. The man to undertake such a task is Mr. Schilleter of the extension service, and the job is that of collecting and preserving antique tools, implements, and methods of farming and the agricultural thought of the days before our time.

A historical museum of this type could not be evaluated in monetary units in the years to follow when posterity could look back at the crudeness of farming in the yesteryears. Even our speedy and modern equipment and methods may become a spectacle in the very near future when the "Atomic Age" comes fully into its own.

Okay, if there is some interested reader around who can contribute in some way to project of this nature, let him step right up and make a start. First the available material must be collected, then some additional material must be tracked down, and finally a place must be secured to house and show the relics.

It seems that there has been quite an array of these antiques already discovered in the vicinity of Clemson and it was the discovery of these existing relics that led to the instigation of this effort of Mr. Schilleter's to restore them to the original and to use them as a reminder to posterity of the basic fundamentals of progress so influential in developing one of the really great nations of the world.

tion relating to the business side of life. Granted—the courses are available, but have you ever tried to sign one of them up?

The Search For More Economical Fried Chicken

by HOWARD N. RAWL, *Poultry*, '53

The search for more economical and better quality meat-type chickens resulted in the "National Chicken-of-Tomorrow Contests." These contests had their original stimulus in November 1944. At that time, Howard C. Pierce remarked that the breeder who produced a chicken that paralleled the broad-breasted turkey would make a very significant contribution to the poultry industry. Mr. Pierce is the National Poultry Research Director for the Great Atlantic and Pacific Tea Company. His remark was publicized in the poultry press and it attracted wide interest. The A. & P. Food Stores agreed to financially sponsor a program for the recognition of superior meat-type chickens.

Representative members of the poultry industry held a meeting at

Chicago in June 1945. They planned a three-year program for the recognition of superior meat-type chickens. This program was known as the "Chicken-of-Tomorrow Program," and covered a period of three years. State contests were held the first year, state and regional contests the second year, and the national contest the third year.

Two such programs have been completed in series of three years each. The first program was during 1946 through 1948, and the second program during 1949-1951. The A. & P. Food Stores financially sponsored both of these three-year programs. The first national contest is known as the "1948 National Chicken-of-Tomorrow Contest" and was held at the University of Delaware. The second national contest was known as

the "1951 National Chicken-of-Tomorrow Contest" and was held at the University of Arkansas. There were forty entries in each of the national contests. The contestants in both contests were selected on the basis of high placings in state and regional contests.

For the national contests, the contestants sent two cases of hatching eggs from their breeding flocks. From the time the hatching eggs were received until the end of the contests, the entries were under the same environmental conditions. The final national contest entry consisted of 400 straight-run chicks. The chicks in the first contest were reared through an eighty six day growing period while in the second contest the growing period was eighty four days. During the contest, complete records were kept for each entry on hatchability of the eggs, mortality, feed efficiency, and rate of feathering. At the close of the contest, records were also obtained for each entry on live weight, feathering, and uniformity of size, type, and colors. Egg production of the breeding flocks was also considered in the final rating which was reported from the breeder's flock over a five-month period and calculated on a hen-housed basis. At the close of each contest, a random sample of fifty birds from each entry was "New York" dressed and judged according to conformation and condition. Factors affecting edible and meat yields were also considered.

The entries in the contests were from breeders throughout the United States, but breeders from the New England states had the most entries. Despite this fact, both contests were won by the same California breeder. A breeder from Spartanburg, South Carolina, was selected to place an entry in each of the national contests. His entires made an outstanding showing by placing 12th in the first contest and 16th in the second contest. This breeder was the only one from this section of the United States

WOOD'S SEEDS

Headquarters for
FLOWER, FIELD,
GARDEN SEEDS,
HYBRID CORN
Bred by the
Largest Southern
Seed House



T.W. WOOD & SONS

RICHMOND, VA.
SEEDSMEN SINCE 1879



The above pens of chickens were entered in the Chicken-of-Tomorrow Contest for 1951. Note arrangement of pens.

to have an entry in both contests. The predominant breeds were New Hampshires and White Plymouth Rocks. The predominant crossbred entries in each contest were the Cornish-New Hampshire crosses. The winning entry in each contest was a Cornish-New Hampshire cross but the margin of excellence was only slightly above the second place standard bred breeds.

The results of the second contest shows that there is quite a variation among the entries in the economic factors. The first contest will not be considered here since a strain of chickens can change significantly in five years. The range in livability among the entries was from 91.5 to 99.3 per cent. This is a difference of 77 broilers for each 1,000 chicks started. The most efficient entry required 2.84 pounds of feed per pound of live weight, whereas the least efficient required 3.09 pounds of feed. This apparent small difference in feed utilization meant that 750 pounds more feed was required per 1,000 broilers for the least efficient entry. The live weight table shows that there is a great difference among the entries in this factor. The heaviest entry averaged 4.27 pounds and the lightest averaged 3.33 pounds. This difference means that the time for the fastest and the slowest growing to reach the same weight would

be a difference of about two weeks.

The broiler (fryer) industry in South Carolina is expanding rapidly. In this expansion, it is necessary to follow sound management practices. One of the important practices is that of buying high quality chicks that are bred for broiler production. Some of the best meat-type strains of chickens are available from breeders and hatcheries in South Carolina.

LOST FAITH

by Joe O'Cain

A hoe,
A pencil,
A Bible—
An M-1!—
And lost faith!
A man, and yet a child,
Sings 'neath cloud
And dust;
And charred human blood scent
Rises in the midst of life!
A weed grows
And angel tears rust hoe,
And pencil lead is worn
With history's word—
The rubber cannot erase!
And Good pages unread and
rotten
Diffused among this lust for
power.

DANFORTH FELLOWSHIP—

continued from page 7—

mal nutrition, covering every phase in the science of feeding. He also spent a morning explaining the uses, of all the different animals used in research, which ones are used, what they're used for, and how they are cared for.

Some of the other periods were spent on cereals, credit rating, a description of the Purina organization, a tour through the disease control labs, a tour through the manufacturing plant, and several movies. I have probably left out some things and have only mentioned these. It would take all day to really tell about what we saw and heard.

Not every day, however, was spent sitting and listening. We toured the city one day, starting out with several hours at the St. Louis Merchant's Exchange. We saw the several gigantic bridges that span the Mississippi and other points of interest throughout the city, then went through the Forest Park Zoo, one of the most complete in the world.

On another day we visited the Gardner Advertising Agency and learned what goes into the beautiful ads you see in today's magazines, hear on the radio, and see on television and by the roadside.

We took in the East St. Louis Stockyards and toured the Swift and Company packing plant. If you don't think we eat plenty of meat in this country, I wish you could visit such a place. Just imagine such things as weiners pouring out of a machine like water from a hose and a smokehouse four stories high. We saw every process that meat goes through from live animal to delicious packages ready to cook.

Still another day we visited the C-S Marketing Company and saw what happens to the millions of eggs eaten every day. I had no idea there were so many grades of eggs and so many processes for them to go through.

Is this beginning to sound as if the days were full? Read on, you haven't heard all yet. Crammed into the program for our further education and pleasure was a night at the opera, one at the ball park, and a banquet. We saw "Naughty Marietta" in St. Louis' enormous outdoor theater, which holds 12,000 people. In Sports—

continued on page 31—

CAUTION!

Radioactive Material

by ROBERT E. POSTON, *Agronomy '54*

Signs bearing the above words are becoming a common sight at greenhouses and experimental plots throughout the United States. This doesn't mean that we are working on atomic bombs; instead, it means that we are learning much about the processes of plant growth and the value of fertilizers through the use of radioactive elements. Experiment stations are employing the radioactive forms of nearly all the elements essential to plant growth. Radioactive phosphorus is used to a large extent because it is one of the major plant nutrients and is not quite as dangerous as are some of the other elements.

At Clemson, radioactive phosphorus has been used in numerous experiments by Dr. A. B. Prince and Mr. E. H. Stewart. They have worked with such farm crops as cotton, alfalfa, sericea, perennial rye grass, and reseeding crimson clover. Fertilizers containing radioactive phosphorus are applied in carefully measured amounts to soils growing these crops. The phosphorus that is taken up by the plant can be traced to the plant parts by two means: the use of a Geiger counter and the use of radioautograms.

The Geiger counter will give a clicking noise when held close to any radioactive phosphorus and the intensity of phosphorus can be determined by the frequency of the clicks. The plants containing the radioactive phosphorus may be mounted and pressed against special photographic film for a certain period of time. Radiation coming from the radioactive phosphorus exposes the film and the resulting negative is called radioautogram. When prints of radioautograms are made, plant parts containing large amounts of radioactive phosphorus will show up lighter in the picture than will other parts. By these methods the role which phosphorus, as well as other elements, plays in the growth and development of plants can be more precisely determined.

Because of the danger involved in their use, radioactive elements cannot be used in commercial fertilizers. They can, however, be used in experimental work to measure the efficiency of different fertilizers. A good example of this is the application to the soil of superphosphate made from radioactive phosphorus. Then an analysis of the plants grown in the soil shows exactly what percentage of the applied phosphorus was taken up. A similar technique is employed with other types of phosphorus fertilizers. Their relative efficiency for certain plants and soils can then be determined.

The radioactive phosphorus used in these experiments is obtained from the United States Department of Agriculture which in turn gets it from the Atomic Energy Commission installation at Oak Ridge, Tennessee. Before an experiment station is allowed to use the phosphorus, the station is investigated by the Atomic Energy Commission and a contract is drawn up to insure that proper safety precautions are observed. All field experiments must be fenced and a sign stating that radioactive materials are being used must be posted. All personnel working with the experiments wear film badges which determine the amount of radiation given off. The film in the badges turns dark upon exposure to radiation and the amount of radiation is determined by the degree of darkness of the film. Special tractor-drawn equipment, designed to protect the operator from radiation, is used to apply radioactive materials in the field. A portable Geiger counter is used at all times to monitor the experimental area and personnel. When there is danger of contamination of the body with radioactive material, rubber gloves, dust respirator, and other protective clothing are used.

This is the fourth year that these experiments have been run at Clemson and much has been learned from

them. Dr. Prince and Mr. Stewart are now planning an experiment in which they hope to find the efficiency of phosphorus applied in permanent pastures in varying amounts and frequencies over a two year period. The data obtained from this experiment will help the farmer obtain the most economical use of his fertilizer with a minimum of field operation.

FARMERS MAY OBTAIN RECENT EXTENSION SERVICE PUBLICATION

Circular 382—Control of Root Knot and Other Nematodes

Circular 381—Planning For Balanced Farming

Circular 380—Cotton Production, Insect and Disease Control, 1953

Circular 379—The 1952 Cotton Contest

Circular 378—Lime For South Carolina Soils

Circular 360—Peach Pest Control (Revised)

Circular 332—Thinning For Pulpwood (Revised)

Bulletin 114—Insect and Plant Disease Handbook

Bulletin 110—Freezing Food For Home Use (Revised)

Bulletin 104—Agronomy Handbook For South Carolina (Revised)

Recent Experiment Station Publications—

Circular 87—Blackstrap Molasses As A Feed For Livestock

Bulletin 401—Inspection And Analysis Of Commercial Fertilizers

Because of the cost involved, a charge of 25c per copy is made for Bulletin 114 and a charge of 65c per copy is made for Bulletin 104. The other Bulletins and Circulars are for free distribution. You may obtain these publications by writing to Clemson Publication Department, Clemson College, Clemson, S. C.

THE AGRARIAN

Clemson Needs an Ag. Museum

South Carolina's crude agricultural tools are significant in the hearts of our state's prominent colonial families—and something needs to be done to save the tools by which the state's great agricultural heritage was built.

Thousands of visitors yearly admire the original John C. Calhoun home-place on the Clemson campus. Truly, South Carolina is proud of the "Calhoun Museum;" however, few realize that an even greater "Carolina Museum" is decaying before our own eyes. Today's giant wheels of progress have overrun all of our Colonial type tools and machinery. For example, the young farmer of today probably never thought of the old screw type cotton press such as the one found at the old Ed Ravinall Place at Clemson.

These old screw type presses were used years before the modern hydraulic cotton presses were built. A team of mules, which furnished the power for the press, was hitched to each end of a long wooden beam

By A. D. Owens, Agron. '54

which was connected in the center to a large wooden screw. As the mules walked around in a circle, they turned the large wooden screw which in turn pressed the cotton into a bale.

With only a few in existence in the state, perhaps there is no wonder why so few people know about these "antiques." Possibly there are many antiques which are useless to the individual farm owner which could be used very effectively in an interesting agricultural museum. Year by year the value of such antiques is deteriorating.

According to Mr. A. E. Schilleter, horticultural extension serviceman, "Greater appreciation for South Carolina's agriculture would exist if we had a museum or some type building to display and preserve the tools which were once essential to our agriculture."

Clemson was the center of a lively agricultural section even before our present college was founded. In the

Fort Hill Community, the first South Carolina Farmers' Agricultural Society, later called the Farmers' Federation, was organized and extensive experiments were set up. Because of the lack of funds and farmers' interest, a collection of old tools used in South Carolina's early agriculture experiment has never been promoted.

Probably everyone who has been associated with agriculture in South Carolina and has watched these tools fade out of use has a love for them and would like to see a museum established. Such a museum would not only preserve our great South Carolina heritage, but it would also preserve our colorful pages of history to future generations who would appreciate them and have a greater knowledge of the history of South Carolina's agriculture.

—
Editors Note: Anyone interested in the idea of an Agricultural Museum, write to the editors of the AGRARIAN, Long Hall, Clemson, S. C.

Class Picks Up First Hand Info at Mill

On the 17th day of December, the Feeds and Feeding classes along with their instructor, Mr. Jim Cook, took a field trip to the Spartan Grain and Mill Company in Spartanburg, South Carolina.

When the group reached the mill they were greeted by the president, Mr. Fretwell. After a brief discussion and introduction of some of the staff, the classes were divided into groups and toured the complete mill. The groups started their tour with the inspection of the receiving rooms, where all grains and concentrates are stored until needed. The students were astonished with the

ultramodern methods for loading and transferring the incoming materials. The mill foreman explained

the processes of mixing, storing, bagging, weighing, and the transferring of the finished products to the warehouse.



Group looks over pigs which are on feeding experiments. It is worthwhile for the reader to notice the method in which the feed is stored in the above picture, saving both labor and space.

Next, the groups visited the laboratory where all of the products, both incoming and outgoing, are tested. The head of the chemical staff, Mr. A. W. Koon, a Clemson graduate, discussed the methods of testing the composition of the products.

The groups were then assembled and adjourned to the Franklin Hotel for lunch as the guest of the Company. After lunch, they moved on to the Research Farm of the Spartan Grain & Mill Co.



Leading the Way

Spartan leads the way in developing better feeds and feeding programs for The Southeast's rapidly expanding poultry and livestock populations. Recent new feeds include:

- SQ Booster (for all poultry)
- SQ All-Mash Layer
- SQ All-Mash Breeder
- SQ Creep Feed (for beef calves)
- SQ Livestock Minerals

Also introduced to The Southeast by Spartan were the new, convenient "Handy Fifty" paper bags, plus the new type, coarse-textured dairy feeds containing pellets and crimped oats.

THE BATTLE AGAINST WEEDS

continued from page 11—

this compound should be mixed with a good grade of fuel oil, although it is equally effective when mixed with water and used for foliage applications.

In addition to the selective weed killers, there are also compounds for commercial use which may be applied to cotton for the control of both weeds and grasses. Two such herbicides are "Dinitro" compounds and Chloro-IPC. Both of these chemicals are applied to cotton as post-emergence sprays for the control of weeds and grasses.

A number of factors enter into the successful post-emergence control of weeds and grasses in cotton. First, the cotton must be old enough to tolerate the application of the herbicides. Second, great care must be taken to prevent the cotton plant's leaves from becoming wet with the special herbicidal oil. This is accomplished by using a small nozzle traveling beneath the lower leaves of the plants and directing the stream of material downward. Third, the herbicide must be applied when the weeds and grasses are just appearing above the surface of the ground.

A few compounds are also on the market which are designed to control weeds and grasses to the extent that

the soil will be sterile for a period of six months to a year. A new compound of this nature is C. M. U. It is not available for agricultural use at the present due to the uncertainty of the length of time it will cause the soil to remain unproductive. It would, however, be very valuable for use around farm buildings to lower the fire hazard due to dense growth of grasses. Other compounds of this nature which are available are sodium penta chlorophenate, sodium chlorate, borax, and various combinations of these materials.

At the present time intensive research is being conducted throughout the United States on chemical weed controlling agents. At Clemson tests are being carried out under the direction of Dr. W. B. Albert, associate physiologist of the South Carolina experiment station. Several circulars have been prepared by Dr. Albert and his co-workers and these are now available to anyone who is interested in the subject.

Although rapid advancement has been made in the field of chemical weed control in the past few years, the subject by no means has been completely explored, and as a result there are many problems upon which not more than preliminary observations have been made. As new chemicals and improved methods of application become available, many of today's problems should be solved, and the amount of hand labor in future crop production should decrease

CLEMSON SENIORS

continued from page 9—

Robert Hollingsworth, "Young Robert," from Cross Hill, S. C. is majoring in the field of Animal Husbandry. Robert is active in Presbyterian Student Association, the "Y" Cabinet, and the Block and Bridle Club.

He has started a good herd of registered herefords and he plans to farm as soon as he can. Robert's favorite pastimes are sleeping and fishing.



ROBERT HOLLINGSWORTH
Cross Hill, S. C.

A. W. Leland, a Dairy major, is from that fertile spot in the "Low Country" known as Wadmalow Island. His success at Clemson might easily be traced back to his outstanding records in the Charleston County 4-H Club work. Aaron is the past president of Beta Sigma Chi, vice president of the Dairy Club, a member of Alpha Zeta, and Presbyterian Student Association. Aaron has also been to Camp Miniwanca. After serving his term in the service, Aaron plans to take up farming in the "Low Country."



A. W. LELAND
Wadmalow Island, S. C.

THE AGRARIAN

Will Your Bull Be a Beauty ... or will he grow economically

by R. T. Hollingsworth, *Animal Husbandry*, '53

The bull feeding project recently conducted by the Animal Husbandry Department of Clemson was followed with a great deal of interest by all those in South Carolina interested in beef cattle. The purpose of this feeding project was to determine the feeding qualities or gaining abilities of the individual bulls. An accurate account was kept of the progress made by the bulls throughout the feeding period. The bulls were constantly weighed and the average daily gains were recorded. All of this work was under the able supervision of Mr. R. R. Ritchie of the Animal Husbandry Department.

The idea of a bull feeding project was first brought up by the South Carolina Livestock Breeders Association in the Summer of 1951. They requested that such a project be conducted, and it was started the following fall. For this first test, twenty-five bulls were brought in from different parts of the state and the experiment was carried out very successfully. At the end of the feeding period, a sale was held and the bulls were sold for prices ranging from two-hundred and sixty-five dollars up to thirteen-hundred dollars.

This year a similar test was carried out, starting on October 7, 1952 and running through February 24, 1953. Eighty-two bulls were nominated from all over the state for the project. A selection committee went out, looked at the bulls, and accepted fifty-two for the experiment.

Although no specification as to age was made, the bulls selected were calved on dates ranging from December 1, 1951 through the middle of March 1952. The fifty-two bulls accepted consisted of twenty Herefords, eighteen Polled Herefords, twelve Aberdeen Angus, one Polled Shorthorn and one Brahman. All of these bulls were selected from well managed herds of South Carolina and the outstanding bloodlines of the nation were represented.

Although students did not actually

do any of the feeding in the test, many of the Animal Husbandry students did get quite a bit of practical experience in beef production from the project. The freshmen constantly washed and groomed the bulls while the other classes weighed and measured the bulls and got them ready for sale.

The ration used in the project was designed as a growing ration as well as a fattening ration. All the bulls in the test were fed individually on a full feed. Hand feeding was practiced, and the hay and concentrates were fed separately. The type of ration used was found to be very satisfactory for the project.

The average daily gain for this year's test was 2.01 pounds. The highest daily gain was 2.5 pounds and the lowest was 1.29 pounds. According to breeds, the Polled Hereford had the highest daily gain with 2.14 pounds; the Shorthorn was second with 2.07 pounds; the Hereford third with 1.95 pounds; the Aberdeen Angus fourth with 1.94 pounds and the Brahma last with 1.82 pounds. It should be noted, however, that

there was only one Shorthorn and one Brahma in the test, which is hardly enough from which to draw any conclusions. It should also be noted that the difference in the daily gain of the Hereford and the Aberdeen is not significant.

The gaining ability which was determined in this test is of great importance, since it is felt that feeding quality is transmitted from the bull to the offspring. This test, however, is not considered an indication of the feeding qualities of the sires of these bulls, due to the fact that only one bull of any sire was tested. A number of offspring from a sire would have to be tested to reach a conclusion as to the feeding quality of the sire. This test merely shows the feeding qualities or gaining ability of the bulls, which may serve as a guide in selecting a bull for the breeding herd.

A few days after the project was completed, the bulls were sold at auction to cattlemen throughout the state. It is hoped that these bulls will do much to improve beef cattle in South Carolina.

What it takes
NACO's
got!

NACO

FERTILIZERS
that build
better crops

INSECTICIDES
that assure
crop protection

CHARLESTON, S. C.
SPARTANBURG, S. C.

THE DISEASE CALLED X

by HARRY VILDIBILL, Pre-Veterinary '53

A Modern Disease Which Has Baffled Veterinarians, Cattlemen For a Decade

A mysterious thing—this disease, no one knew where it had come from or where it would strike next. Outbreaks would occur hundreds of miles apart in even the most isolated cattle herds.

X-disease was first reported in a New York dairy herd in 1941. Within a few years the disease was spreading to parts of the United States and some sections of Europe. By 1948 all of the states east of the Rockies had reported cases of the disease, but the most numerous reports came in from the Southeastern states. Tennessee reported losing 300 head of cattle valued at more than a million dollars.

Animals affected with X-disease lose their appetites and drool saliva. The skin along the neck, jaws, flanks and between the hind legs becomes progressively thicker, wrinkled, scaly and encrusted; their hair falls out in the most severely affected places. Ulcers or raised areas appear in the mouth. Chronic coughs, diarrhea, and mucous discharges from the nostrils are other common signs. Pregnant cows may abort or give birth to dead, fully developed calves. Milk production will be reduced severely. Mortality is highest in young calves, lowest in mature cattle and the majority of cases occur in cattle six to twelve months old. The disease may affect an animal for several weeks to a few months before death or recovery occurs. Post mortem examinations show ulcers in the abomasium or true stomach, inflammation in the intestine, and damage to some of the organs.

Seventeen land grant colleges began seeking the answer to X-disease. Soil types, fertilizers, rare minerals, and poisonous plants were studied to determine if they caused X-disease. They did not. Then one day Dr. Dennis Sikes of the Veterinary Department at the University of Tennessee, came up with the answer. Dr. Sikes had been doing research on X-disease for several years and had visited many farms in Tennessee



Severe case of X-Disease, found in Pickens County, showing the thickened and wrinkled condition of the skin. (Photo by Dr. G. W. Anderson)

where X-disease had occurred. He had noticed that in many of these affected herds the animals had grease or used crankcase oil on their backs for lice control, or they were housed with, or could in some way come in contact with farm machinery. Dr. Sikes realized the importance of these observations and began feeding a ten month old calf capsules of various lubricants. The calf developed X-disease. Work at Cornell and Virginia Polytechnic Institute confirmed Dr. Sikes' findings. It was found that the causative agents of X-disease were chlorinated naphthalenes. Chlorinated naphthalenes were first added to lubricants on a large scale basis in the early forties; this is when X-disease began. Besides being used to make lubricants more heat resistant and waterproof, chlorinated naphthalenes have also been used in insecticides, electrical insulation, and certain wood preservatives.

Although there is more to be learned about X-disease we can act on what we already know. Some precautions we may use in guarding against X-disease are as follows:

1. Animals should not be allowed

- to come in contact with machinery—tractors, bulldozers, combines, etc.

2. Dispose of used lubricants where animals cannot get to them. Do not lubricate machinery in the pasture if there is danger of dropping grease or oil on the grass. It takes only a small amount to kill!

3. Avoid use of insecticides and wood preservatives containing chlorinated naphthalenes.

In the future, chlorinated naphthalenes will probably be eliminated from lubricants, insecticides, and wood preservatives for farm use. Until this happens, we must use these products with utmost precaution.

OPENS COUNTRY CHURCH SURVEY

Clemson's associate rural sociologist, Mr. Virlyn A. Boyd is conducting a unique study of the open-country churches in Anderson County, South Carolina. The report will be published in the near future by the South Carolina Agricultural Experiment Station at Clemson and will carry the results of the completed survey.

Special interest in the rural community and the rural church is alive today since non-farm workers living in the rural community are able to give financial support. According to Mr. Boyd, "With the increase in our farm income over the Thirties and the addition of non-farm jobs, financial support has increased so that many churches are not only able to have a full-time program of services but are also improving their buildings and facilities. The most encouraging aspect of my work with the rural church is the revitalization of many open-country churches."

The church publication grew out of the interest of the annual Rural Church Conference held at Clemson during Farmer's Week.

Ag Students Will Visit Europe

"Grass Roots Ambassadors" Selected for Outstanding Leadership in Community

by EDWIN F. NOLLEY, VAE '54

Two Clemson College students, Fred E. McLaughlin, Jr. of Florence County and Benjamin S. Wiggins of Richland County have been selected to travel to Europe this summer as South Carolina's first "Grass Roots Ambassadors" under the International Farm Youth Exchange program.

The International Farm Youth Exchange is a project for young people from farms in the United States to live and work on farms in other countries, and for farm youths from these countries to come here and observe rural life. Those who go to other countries are called "outbound delegates," while those who come to the United States are called "inbound exchangees." The project helps rural young people to understand and appreciate the problems of similar people in other countries of the world.

The first "inbound exchangee" to visit South Carolina is Mr. Allan Richardson of North Auckland, New Zealand. Mr. Richardson, who is twenty-two years old, arrived on March 12 and will remain in South Carolina until May 24. While here he will concentrate his studies mainly on dairy production since he owns a dairy farm in New Zealand.

The Exchangee is dedicated to the belief that UNDERSTANDING is the foundation of world peace. While delegates will learn about agriculture and science in their host country, what they learn in this respect is important ONLY as it helps them to understand the "way of life" of others.

Benjamin S. Wiggins, a Dairy major, will go to Switzerland, and Fred E. McLaughlin, an Animal Husbandry major, will travel to England and Wales. They will go this June and return in November, and while there they are to be accepted as

members of the families with whom they live; for mutual respect and understanding must begin at the family level.

The I. F. Y. E. program between the United States and other countries has been going on for the past six years. In 1953 plans are for America to exchange more than one hundred thirty-five selected rural young men and women between the ages of twenty and thirty.

South Carolina's young men, both sophomores at Clemson College, were selected because of their outstanding achievements and leadership in their communities and county. The I. F. Y. E. project is sponsored by the Clemson Extension Service and the State Master 4-H Club in cooperation with the National 4-H Foundation. Expenses for the delegates are provided by interested local 4-H Club and Extension Service groups, Civic Clubs, and business firms.

The Citizens and Southern National Bank of Columbia through the Lane Bee Memorial Foundation in financing young Wiggins' trip. Local groups and business firms of the Florence area and the Capitol Life and Health Insurance Company are paying the expenses of Fred McLaughlin, Jr.

Upon their return to this country, both young men will report their experiences to various clubs and groups in South Carolina.

Fred stated that he feels the experience which he will gain will be very beneficial and worthwhile, because the best way to create friendship and to learn the habits and methods of a people is to actually live with them. He has done extensive research in the English ways of life and other things such as the conversion of American currency to the English monetary system.

While in England McLaughlin will



Left, Fred McLaughlin, right, Bennie Wiggins. These two will be South Carolina's "Grass Roots" ambassadors to further understanding between nations.

be the guest of the Young Farmer's Club which is similar to the 4-H Club in the United States, except that the age limit is set at twenty-five. These Young Farmer's Clubs carry on study groups, practical field work, surveys, and social and athletic events.

Benjamin feels that his stay in Switzerland will be most helpful to him in securing his dairying degree here at Clemson since Switzerland is one of the foremost dairy countries of the world. He will live with from two to ten Swiss families while there, and from them he hopes to learn much about the Swiss people, their customs, habits, and especially their agricultural and dairying practices. But since the prime purpose of his visit is to promote understanding between Switzerland and the United States, Wiggins will give this goal first consideration because of its significance in world peace.

Professor, after having helped a student make out his schedule: "Well, you're all finished except for drop-add."

* *

A G. I. working on a railroad in India had been severely reprimanded for taking over duties which were not included in his orders. He was pretty well "shook up" over the incident.

No long afterwards, headquarters received a startling telegram: Tiger on my loading platform eating lieutenant. Wire instructions.

Diseases In The "Mortgage Lifter"

Hidden Losses In Pork Production

by JAMES E. YOUNG, A. H. '36

No other animal has contributed more to American agriculture than the common hog, which is more popularly known as the "mortgage lifter." The hog has acquired this title because of its efficient utilization and conversion of garbage, stale bakery goods, and dairy by-products into palatable, nutritious foods for human consumption; its adaptability to every size and type of farm; and its ability to multiply and fatten rapidly—thus providing the raiser with quick income with which to help pay off his mortgage.

Today, the swine industry in America has attained a new, modern state of development by which it produces about 25 per cent of the world's supply of pork. Nevertheless, it still has many problems to overcome.

The application of health-conserving, disease-prevention, and parasite-control measures to breeding, feeding, and management of herds of swine are necessary for successful pork production. Contrary to common belief, the hog, by nature, possesses clean habits if only he is given an opportunity. In many cases, however, the hog is subjected to close confinement, crowded conditions, and filthy quarters which favor the attack by the common diseases and parasites of swine.

Swine herdsman should be informed of the relationship of swine diseases and parasites to other animals and to human health. It is a known fact that over one hundred types of infectious and parasitic diseases can be spread from animals to human beings. One of the most serious parasitic disease of human beings is trichinosis, which is caused by eating *TRICHINELLA SPIRALS* infected pork which has been improperly cooked. This disease often results in the loss of human lives.

There is no domestic animal that isn't affected by some sort of internal parasite. Harboring any kind of parasitic worms will result in heavy losses to the owner of most kinds of livestock. Hogs are probably more susceptible to and affected by parasites than any other class of livestock, with possible exception of sheep. Hogs are not affected with true stomach worms, but they do harbor many species of nodular worms, whipworms, and hookworms.

These worms are most commonly found in the southern states and usually live in the intestine of infected hogs. Although there are many different kinds of internal parasites which infest swine and cause heavy losses to the pork producer, the big ascarids and the kidney worms are most notorious. They are all round worms but none of them are so widely distributed as the big ascarids or more commonly called roundworms.

The adult roundworm, technically known as *ASCARIS LUMBRICOIDES* var. *SUOS*, is usually yellowish or pinkish in color, eight to fifteen

inches long and almost the size of a lead pencil. The life history of this parasite may be briefly described as follows:

1. The female worm lays eggs in the small intestines and these are eliminated with the feces. They are extremely resistant to the usual destructive influences and will remain alive in the ground for several years. These eggs do not hatch into larvae at once, but instead, they have to be swallowed by the hog along with contaminated feed or water before they hatch.

2. After the eggs hatch, the larvae burrow through the walls of the intestine and find their way into the blood stream, liver, lungs, and other organs of the body.

3. The larvae keep on growing there, and eventually crawl up into the back of the mouth and are swallowed, again entering the stomach where they set up housekeeping in the small intestines. Here the larvae mature into sexually mature worms and start laying eggs of their own.

After a complete life cycle of the roundworm, which usually takes about two months, hog lots may rapidly become infested, for a single female will sometimes lay up to 200,000 eggs per day.

The adult worm usually does slight damage but the larvae can cause serious lesions. Although the symptoms of infested animals are various, most worm victims become unthrifty in appearance and stunted in growth. Coughing, "thumpy" breathing, slobbering, and vomiting are characteristic symptoms of most worm infested animals.

Control of roundworms consist of

continued on page 32—



Parasite-free pigs thriving on a clean pasture.

Seeing Is Learning

by GENE NORRIS, V. A. E. '54

By means of visual aids forty percent more is learned and fifty-five percent more is remembered! In order to take advantage of this, the Vocational Agricultural teachers in S. C. are making extensive use of visual aids. The motion picture, slides, and film strips are brought into many people's mind when visual aids are mentioned; but these are just a few of the available aids. For instance, opaque projectors, blackboards, bulletin boards, charts, maps, objects, specimens, models and field trips serve as inexhaustible sources of visual aids in teaching agriculture. As the name implies these aids are only teaching devices for the teacher, but if used properly, beneficial results can be obtained.

The motion picture has grown more in popularity in the last few years than any other form of visual aid. Some of the reasons for popularity are that the attention of the learner is attracted by the showing motion. The situation is made natural and life-like and actions that otherwise move too rapidly or too slowly, are made depictable by the human eye. Even with these advantages, the teacher must make adequate preparation. An introduction to the subject matter in class should be used to arouse the student's interest. Before the movie is shown, interest can be further stimulated by asking questions and telling the students what to look for in the picture. After the movie is shown the teacher should have a discussion of the subject to clear up any hazy points or help to organize the information. The final step is for the teacher to find out what has been learned or what attitudes have been changed.

Another useful and popular aid in teaching is the opaque projector. This instrument, which projects on a screen by reflection, pictures, maps, diagrams, and other flat objects, make books, magazines, bulletins, and other publications an inexhaustible source of material. The interest created in preparing materials by teachers and students, the availability for class use of any material where

there is only one copy, and the inexpensiveness of materials are among the advantages of this projected aid. Unlike the motion picture, opaque pictures can be discussed fully before proceeding to the next picture.

The use of slides and filmstrips is another way of creating interest in better farming. Pictures of crop and livestock enterprises, soil and water conservation activities, and farm shop work often encourage a student to take more pride in his work.

Actual visual aids probably teach the student more from a practical standpoint than any other aid. Some of the actual specimens or objects agriculture teachers use are insects, various grades or classes of crops, seeds, ingredients of feed or fertilizer, soil profiles, diseased plants and certain chemicals.

Field trips also provide an excellent source of visual aids. On field trips, the student sees how operations are actually carried out but it can be a period wasted if the teacher does not prepare the students by telling them where they are going, who

is to be there, and what to observe.

With the rapid progress being made in agriculture, a teacher needs to employ all of the student's five senses to keep them well informed. Certainly visual aids can and are playing an important part in providing up-to-date instruction for students of vocational agriculture.

"Going around with women a lot keeps you young!"

"How come?"

"I started going around with them four years ago when I was a Freshman—and I'm still a Freshman."

* *

"Officer, come quickly! I've run over a Carolina student!"

"Sorry, Cadet, this is Sunday. You can't collect your bounty until tomorrow."

* *

I serve a purpose in this school
On which no man can frown.
I quietly slip into class
And keep the average down.



Assistant County Agent of Collenton County makes use of a visual aid to teach farm safety. (Photo Courtesy Clemson Extension Service)

POLLED HEREFORDS—

continued from page 5—

position, and are more docile in every way than horned stock, therefore, being able to put on more pounds per day and keep it there. Dehorning rids the animal of horns but brings about a large shrink due to loss of blood and shock from the operation.

In war or peace, the purebred cow is a stabilizer of the country's economy. Her value may not rise as rapidly as some items, but neither does it drop as rapidly. She can thrive on roughage that would otherwise be wasted. She and her offspring work day and night to help alleviate the various surpluses of grain and rebuild depleted soils while doing so. She doesn't ask to be subsidized or for special concessions when working over-time.

The wealth of each mind is proportioned to the number and to the precision of its categories and its point of view.

PARITY

By VANCE LOY

Ent. '53

In recent years this country has seen a new god arise in the agricultural world "Parity." This word has become so sacred that perhaps the easiest way to get ones throat cut at an agricultural gathering is to denounce it. Many who use the term parity to represent a flawless, unchanging thing to be classified along with equity and fair play, either do not know the meaning and history of the word or possess malicious intent to deceive the public.

An economist defines parity (as used in all price support legislation) as "that price which one unit (bushel, pound, etc.) of a commodity would have to bring in order to give that one unit as much purchasing power, in terms of things farmers buy, as it had during a previous, or "base period." The period, generally, is 1910-14, but the common practice in the past has been to use the period which gives the highest parity price.

It is generally known that the government has not always supported prices at 100% parity. However, the figure has usually been from 60 to 95% parity, depending on the commodity. Lately there has been considerable pressure brought to bear on the government to support prices at 95 or even 100% parity. This pressure is causing some controversy and much hard feeling against the new administration. Even now conditions seem to indicate that some parity prices are too high, for example the current over-production of various commodities. These conditions suggest that the support price is not only a support, but is also a lucrative price for these commodities. On the other hand, some parity prices have never been as high as the free market was willing to pay.

Parity has been aptly called "Artificial Economy". It is quite true that agriculture is more susceptible to economic changes and suffers more from them than other enterprises, therefore some support is an absolute necessity. But to suggest that each item should exchange for the same quantity of goods forever is absurd.

THESE

2

ARE WORKING FOR YOU

1

CLEMSON BOOK STORE

L. C. MARTIN DRUG CO.

Serving Clemson Students, Clemson People and Clemson's
Friends and Visitors is Our Way of Mixing
Pleasure with Business

"WHERE ALL CLEMSON MEETS"

DANFORTH FELLOWSHIP—

continued from page 21—

man's Park we sat just behind home plate and watched the Browns beat the Yankees. Then on our last night in St. Louis we ate an Italian dinner in the New Orleans Room of Garavelli's restaurant.

Sunday morning we left St. Louis for the second half of our Fellowship. We travelled to Milwaukee by train, with a stop in Chicago for a few hours. Most of us took a bus tour of the city, then attended a show. From Milwaukee we went by steamer to Muskegon, Michigan, then a bus carried us up to Camp Miniwanca, at Stony Lake, Michigan.

Miniwanca is a 300-acre camping site in the heart of the famed fruit belt and wooded sand dune country of western Michigan, owned and operated by the American Youth Foundation. Its purpose is to help train Christian leaders for the world, assist them in their life planning, and help them to develop balanced Four-fold Living.

The program for these two weeks was just as fast and varied as the

preceding one. We were awakened by a bell at 6:30, put on swimming trunks and went out for the flag-raising, limbering-up exercises, and a dip in the lake, all in rapid succession. After breakfast, a devotional period and clean-up time, we spent the mornings in a log cabin classrooms listening to outstanding leaders from all over the United States. In our "Ag Senior" class Mr. Danforth presented ten of our country's leading businessmen to talk to us on "Life's Essentials."

After luncheon we had an hour or two of relaxation in preparation for the program of organized games, tournaments, swimming, canoeing, sailing, and other recreational activities that filled the afternoons.

Each evening we had a sunset vesper service atop Vesper Dune, overlooking Lake Michigan. I cannot describe the beauty and impressiveness of the occasions as the sun slowly sank into the lake while we sang hymns and listened to the speakers.

The remainder of the evening was devoted to some social event, such as the rodeo, the square dance, bull sessions in the Council Circle, and a

visit with Mr. Danforth, or "Minisino", as he is called.

The camp was divided into six tribes, living seven boys to a tent. We all participated in everything, competing both by tribes and by states for the best camper plaques. Each day's activities emphasized the idea of four-fold development—physical, mental, social, and religious.

There is only one way for you to really understand all that I've been trying to tell you, and that is to make the trip yourself. Every year a rising senior from Clemson gets this opportunity, and, using Mr. Danforth's motto, "I dare you" to be the one to go in 1953.

Poverty is not dishonorable in itself, but only when it comes from idleness, intemperence, extravagance, and folly.

—Plutarch

Society would be a charming affair if we were only interested in one another.

—Chamfort

A champion of the workingman has never yet been known to die of overwork.

—Frost

Farmers Cooperative Exchange

FEEDS—SEEDS—FARM SUPPLIES

1215-19 Wayne St.

Phone 25679-0

Columbia, South Carolina

•
"Owned by South Carolina Farmers"
•

HIDDEN LOSSES IN PORK PRODUCTION

continued from page 28—

treatment with sodium flouride, a most practical drug for removing these and other intestinal worms from swine, and phenothiazine given either in capsules or mixed with ground feed. Although a dangerous poison, sodium fluoride will expel 95 per cent or more of the roundworms from the swine.

This treatment may be administered by fasting the hogs for at least twelve hours and then feeding them a normal ration of carefully prepared mixture containing one part by weight of sodium fluoride to ninety-nine parts by weight of dry ground feed for only one day. This treatment should not be given to pregnant or lactating sows. Sodium fluoride should not be given in slop or any kind of aqueous solution, since it may settle to the bottom, so that one of two animals will receive the full benefits of the entire dose. This is an unsafe practice and may result in the death of the overdosed animals.

Although roundworms are more widely distributed, the kidney worms are more detrimental to profitable swine production. Kidney worm infestation of hogs not only causes inefficient gains but also damages the kidney, liver, loin, leaf fat, and other parts of the carcass which makes meat unfit for human consumption.

Adult kidney worms may be found in the kidneys and in cysts in the ureters. Unlike the eggs of the roundworm, which are passed in the feces, the eggs of the kidney worm are passed in the urine. The mature female worms lay numerous eggs, and it is estimated that as many as one million eggs are passed in the urine of a moderately infected hog in one day.

Tiny larvae hatch from these eggs within twenty-four to forty-eight hours, depending on temperature conditions and the moisture content of the soil. Eggs and larvae alike may live for months in moist, shady places, but die quickly when exposed to drying. Other hogs obtain kidney worms then, by swallowing the infective larvae with contaminated feed and by rooting in litter that has become contaminated.

Symptoms are usually limited to

loss of weight and retarded growth rate, although stiffness and even death may result from heavy infestation.

Diagnosis is only positively made by microscopically discovering the presence of eggs in urine. Frequently, infected animals may discharge pus in the urine.

Although there is no known drug treatment for removing kidney worms from infested swine, satisfactory prevention and effective control of these costly worms is obtained through proper sanitation; thus avoiding infestation with the larvae. Practical sanitation is the only effective preventive of any parasite infestation of swine.

Regardless of efficiency of different treatments, prevention is more desirable and less expensive than any kind of worming procedure for swine.

The application of the McLean County System of Swine Sanitation has been recognized as a practical means of keeping porkers free of these costly parasites.

A girl who tries to talk her boy friend into buying her a dress shouldn't mind too much if he tries to talk her out of it.

* *

Read where Hadacol lost its first case. A ninety-eight-year old woman who used it died—but they did save the baby.

PIONEER EXTENSION WORKERS SAW WORK GROWING

The recent death of T. M. Mills, Newberry county, one of the pioneers in farm demonstration work in South Carolina, occurred just a few days before the fiftieth anniversary date of the first farmer-conducted farm demonstration to be carried out under the supervision of an employee of the U. S. Department of Agriculture.

Mr. Mills, who served as county agent in Newberry county from 1914 to 1929, and who helped farm demonstration work grow from its infancy, died February 15, 1953. The first USDA-supervised farmer-conducted farm demonstration was started on the farm of Walter C. Porter near Terrell, Texas, on February 26, 1903. The establishment of this demonstration is considered as the beginning of farm demonstration work in the nation and its starting date is being used as the basis for a nation-wide observance of the fiftieth anniversary of the establishment of farm demonstration work.

A young reporter was asked to cut his obituaries a little shorter, so the next day he wrote as follows:

James C. Humphries looked up in the shaft of the Union Hotel this morning to see if the elevator was on its way. It was. Age 24.

COBLE

Dairy Products

Seal of Quality

Buy At The Green and Oval Sign

Anderson, South Carolina

Here's
TOMORROW'S tractor
TODAY!

ANNOUNCING THE *NEW* MODEL **UB**

Here's a tractor
with **MORE MUSCLE...**
a tractor that's **EASIER**
TO OPERATE... **SAFER** and
MORE COMFORTABLE!

it's the **NEW...**



model **UB**

Here's the newest of the new... a great tractor made even greater!
Now, the new, advanced MM Model UB Tractor offers far more than ever before. **MORE** power! **EASIER** handling! **NEW** safety! **GREATER** economy! **LONGER** LIFE features that mean even bigger value for every farmer's tractor dollar.
Read through the advantages listed below. See how much more today's farmer gets with the new, advanced Minneapolis-Moline UB Tractor.

THESE ADVANTAGES MEAN MORE POWER, COMFORT, LOWER COSTS, REAL SPEED IN THE FIELD!

- 1 **MORE POWER!** Higher compression cylinder heads, greater compression ratio offer *more horsepower* with *new fuel economy!* **PERFORMANCE** that adds up to *less time* in the field, *more work done!*
- 2 **NEW HIGH PLATFORM!** This one big feature provides greater visibility, puts the operator up away from dust and heat, provides ample standing room for a change of pace while driving the tractor. Platform gives a *safe, solid* foundation for new tractor seat.
- 3 **NEW IGNITION SYSTEM!** Double the voltage output means easier starting. New position for battery means easier servicing. Sealed beam headlights make night work easier, road travel safer.
- 4 **NEW STARTER!** The Model UB will start time and again where other tractors fail. Shorter cables cut down power loss.
- 5 **NEW CENTER LINE STEERING** and "needle bearing" universal joints deliver the most responsive, easy to control tractor on the market... equal vision on both sides of tractor. Throttle is right under the steering wheel.
- 6 **NEW SAFETY FEATURES** include shield over hydraulic Uni-Matic jack, complete protection from working parts of Uni-Matic and PTO attachments.
- 7 **NEW PRESSURE COOLING!** Now the UB Tractor has a cooling system like most automobiles... sealed system cuts out anti-freeze losses.
- 8 **AUTOMATIC WEATHER CAP** keeps moisture out of your tractor, stays open automatically while tractor is operating.
- 9 **NEW FLOTE-RIDE SEAT!** Never before such *comfort!* New seat pan, new springs to take the shock, new hydraulic cylinder to absorb the rebound... weight, distance from steering column, and furrow leveling adjustments. Seat can be flipped back if operator wishes to stand.
- 10 **NEW FOOT CLUTCH** is located to the left of the steering column. Large capacity clutch and long pedal make operating easier.
- 11 **NEW BRAKE SYSTEM!** Longer brake pedals (both on the right side of the steering column)... disc type brakes that operate on the transmission countershaft... close spacing that eliminates locking pin... brakes that can be locked in "on" position by foot lever. UB brakes are advanced, respond faster—typical of a tractor that's ahead in so many ways.
- 12 **NEW ROLLER DRAWBAR** that can be locked in place or allowed to roll free.
- 13 **LIVE POWER TAKE-OFF!** Live PTO lever is convenient to operator. Pulled back, lever disengages tractor wheels but allows PTO shaft to turn and clear clogged or jammed PTO implement. Live PTO is optional equipment on the new UB.
- 14 **EXTRA CAPACITY FUEL FILTER.**
- 15 **STELLITE EXHAUST VALVE INSERTS** for best high compression performance, longer wear.
- 16 **NEW, STRONGER "BOSSSES"** on side of transmission case provide far greater strength for front-mounted loaders or implements.
- 17 **LIKE DRIVING THE LATEST MODEL CAR!** MM has designed the new UB to place the steering wheel, throttle, clutch, and brake pedals right in front of the operator where they are naturally and easily reached... yet the UB keeps the exclusive MM Visionlined design.

MINNEAPOLIS-MOLINE MINNEAPOLIS 1, MINNESOTA



It takes that UB power bonus to hold plowing casts to the very rock bottom.

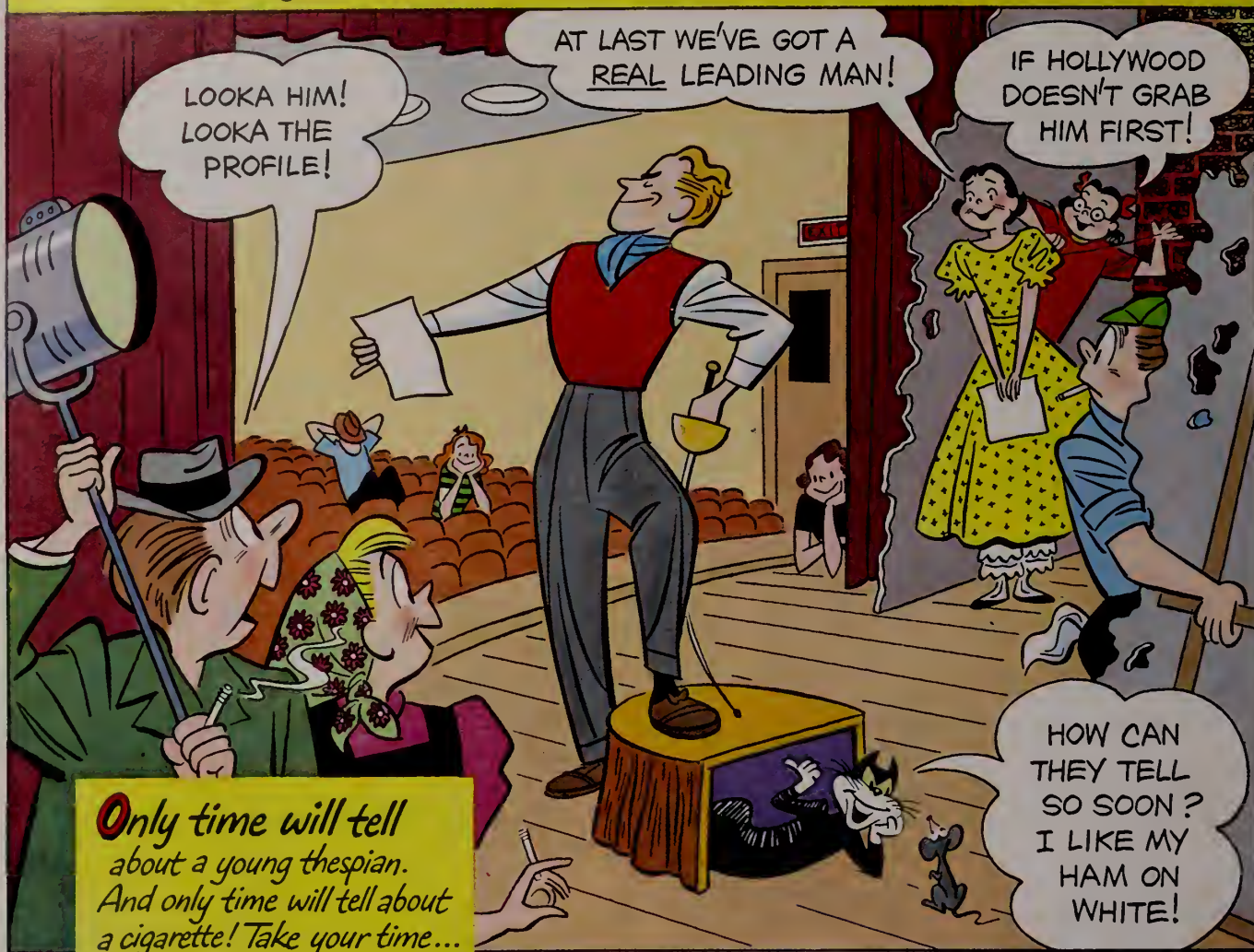


Here's the Model UB factory-equipped to burn LP gas. Farmers everywhere are cutting costs with MM's advanced LP gas system.



Operator stands if he wants to. The big, safe platform on the new Model UB gives plenty of space for a change of pace.

...*But only Time will Tell*.....



Only time will tell about a young thespian. And only time will tell about a cigarette! Take your time...

R. J. Reynolds Tobacco Co., Winston-Salem, N. C.

Test CAMELS for 30 days for **MILDNESS** and **FLAVOR**!



THE REAL PROOF of cigarette mildness is steady smoking. Do what millions of other smokers have done—try Camels for 30 days. By enjoying Camels regularly—on a pack after pack, week after week basis—you'll see how mild, how flavorful, how thoroughly enjoyable Camels are. There *must* be a reason why...



CAMEL leads all other brands by billions of cigarettes!

(371)

The Agrarian

OFFICIAL STUDENT PUBLICATION

CLEMSON, S. C.

THE CLEMSON A & M COLLEGE

NOVEMBER, 1953



SERVING THE FARMERS
IN NORTH AND SOUTH
CAROLINA SINCE 1906



Planters
Fertilizer & Phosphate Co.

CHARLESTON, S. C.

CHARLOTTE, N. C.

THE AGRARIAN

Volume 13

The Clemson Agricultural College

Number 1

Edwin F. Nolley
Co-Editor

Joe W. O'Cain
Associate Editor

James K. Henderson
Co-Editor

John M. Turner
Advertising Manager

Jackie Sanders
Business Manager

Alva L. McCaskill
Circulation Manager

Jerry Hammett -- Feature Editor
Ray M. Buck ----- Dept. Editor

Jack Trimmier ----- Photography
Douglas Owens ----- News Editor

Departmental Writers—

William C. Dailey, Robert J. Donaldson, William E. Byrd, Gene Norris, Heber N. Padgett, Derrick Blocker, Claude L. Mullwee, Jimmy Young, J. David Martin, Tommy Eleazer, Jack D. Edwards, Samuel M. Hair.

Advertising Staff—

Wilson K. Kaiser, Thomas E. Hayden, Baxter M. Hood

Circulation Staff—

Jackie Salters, Charles Johnson, W. Joe Cunningham, Henry B. Erwin.

Advisory Staff—

Prof. Ben. E. Goodale, Prof. T. L. Senn, Ronald North (Student Advisor)

THE COVER: Mr. D. B. Rosenkrans, professor of botany and genuine friend at Clemson College for forty years, is an integral part of Clemson's rustic history as well as the institution itself. Co-Editor Jim Henderson tells an interesting story of Mr. Rosenkrans and his rich recollections in a dedicatory salute on page 3.

IN THIS ISSUE

A Salute to Mr. D. B. Rosenkrans	Page 3
Guest Editorial	Page 4
Ag Engineers Demonstrate to S. C. Farmers	Page 5
Over The Hills To The Sea	Page 6
New Ag Professors	Page 7
Flower Arranging	Page 8
Keeping Our Crops Healthy	Page 9
Between The Furrows	Page 10
Cooperatives In The Carolinas	Page 12
News Briefs	Page 13
Autumn Meditations	Page 14
Off Campus Training	Page 16
Bee Pollination	Page 18
Tall Corn	Page 20

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

Agrarian Philosophy

By EDWIN F. NOLLEY, Co-Editor

Back in the middle of October a headline across the front page of a nearby paper stated that Secretary of Agriculture Benson had announced his plans to reorganize his office, and that certain farm offices would be abolished.

According to The Anderson Independent, "the plan would reshuffle the department's various services and place them under four main groupings: Marketing, stabilization, credit, and federal-state relations." Since then there have been many changes, heated discussions, and an occasional uproar throughout the states. The organizational changes are not due to go into effect until the first of next year, but even before Benson's announcement there was some feeling of anxiety and uncertainty among farmers throughout the United States, especially in the midwest.

Everyone realizes that in any set-up there is room for improvement, but some politicians throughout the country have stated that they consider a complete reorganization of the agricultural offices foolish and unnecessary. With a pessimistic view, a Washington release listed some of the factors bringing about fears of a new agriculture depression that might bear down on farmers and businessmen: "(1) decline in farm prices and incomes, (2) the building up of crop and dairy surpluses, (3) dry weather and poor crop yields in some areas, (4) dissatisfaction with government farm policies and proposals."

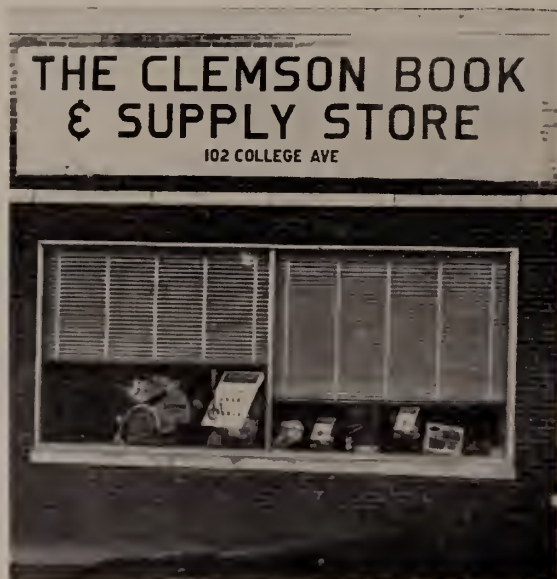
Most farmers seem to be in favor of government help in stabilizing their prices and income through the medium of high parity price supports but they generally dislike the production and marketing controls connected with these high price supports. But the comment that "it is better to be a controlled farmer with an income than a bankrupt farmer with freedom" was heard frequently. The outcome of all these happenings is surely hard to predict, but there will doubtless be plenty of action on the national agricultural scene in the near future worthy of careful attention.

W. B. Camp & Sons, Inc.

BAKERSFIELD, CALIFORNIA
and GAFFNEY, SOUTH CAROLINA

Buckfield Plantation

YEMASSEE,
SOUTH CAROLINA



Two familiar old faces always welcome
you back to the campus.

CLEMSON BOOK STORE
Official College Book & Supply Store

L. C. MARTIN DRUG COMPANY
Serving Clemson Men Since 1908

A Salute to

D. B. Rosenkrans, Professor of Botany

On August 15, 1913, a new professor came to Clemson to make a career of the teaching profession. This professor is still at Clemson and I might say going just as strong as he was the day he arrived. Who is this man who has dedicated his life to teaching Clemson students? His name is D. B. Rosenkrans, Professor of Botany. In this, Mr. Rosenkrans fortieth year of teaching, we of the Agrarian are proud to dedicate our publication to him.

Mr. Rosenkrans was graduated from Upper Iowa University in 1911. Immediately after graduation he accepted a position as Instructor in Botany at North Carolina State College. Here, he remained for two years until a position was offered him at Clemson. This was just a short time after the students of Clemson had staged their famous, or infamous as the case may be, sit down strike in which they marched on Pendleton and refused to go to classes. When Mr. Rosenkrans announced to his friends at State that he had accepted a position as an instructor at Clemson, they were quick to warn him that those South Carolina boys were rough and hard to handle. They told him that the boys at Clemson did what they wanted to, when they wanted to, and in general were just a rough bunch of mountain boys. Mr. Rosenkrans laughed at this, and is still laughing at them when he states that he has never met a finer group of gentlemen than the boys at Clemson.

Mr. Rosenkrans likes to reminisce and think back to the days when he first came to Clemson. At that time,

By
JAMES K. HENDERSON
Dairy '55

there were approximately 700 boys here, making it easy for a professor to know his students. In those days life at Clemson was quite different from the life today. There were formations for everything. The students had to march to and from all classes. One student was appointed by the college to be in charge of each class. His job was to report absences, keep order, and act as moderator in the classroom. Smoking was not allowed anywhere on the campus, and the town was off limits to everyone after long roll. Christmas was the only real holiday—one day being allowed for Thanksgiving.

One of Mr. Rosenkrans' favorite stories reveals the origin of the custom of shaving the rats' heads. It all started when twins came down from the nearby mountains to pursue their studies at Clemson. To tell the twins apart, the upperclassmen shaved one's head. But the other foiled their plans by having his head shaved too. The next year all rats' heads were shaved. Once, an attempt was made to put a stop to this custom by the commandant. An order was issued from his office that there was to be no more shaving of heads. The next morning when the commandant entered the chapel to take his usual seat, his chair was piled high with shorn locks. No more was

said about discontinuing the custom.

There is a twinkle in Mr. Rosenkrans' eye when he recalls such escapades as these, and he cherishes, too, the memory of a Clemson with only three barracks buildings, Mr. Martin's general store, Judge Keller's pressing, mending, and clothes shop, and "Cap" Clinkscales' livery stable. But memories don't stop him from predicting a co-educational Clemson with improvements all around.

Talking with Mr. Rosenkrans, one really sees a picture of Clemson down through the years. And who could better paint such a picture, for with the exception of one professor, Mr. Rosenkrans has been teaching at Clemson longer than any other person on the campus. Forty years he has devoted his life to teaching and befriending the students of Clemson. He is still doing just that—not only inside the classroom, but outside as well. Many years have flown by, many changes have taken place, many students have come and gone, and through it all Mr. Rosenkrans has had the same enthusiasm, the same ever-present concern for every student as well as the college. When Clemson was young, every boy who came to Clemson had the opportunity of knowing Mr. Rosenkrans, and now, the lucky ones who can know him are truly grateful for all his interest and friendship.

So it is our hope that we can express for ourselves and others the heartfelt thanks and appreciation for these many years of service by dedicating this edition of the Agrarian to you, Mr. Rosenkrans.

A CLEMSON MAN FARMS

Today, the Clemson graduate operating a farm is a man who, preferring to be his own boss, takes pride in matching his skill and scientific knowledge against the ageless laws and probable results of nature. He realizes that the business of farming offers his individual interests a wide degree of freedom, and the success of his efforts will be satisfaction from his ability to plan carefully and think clearly. His reward in the business world is the production of the greatest return at the lowest cost. A man on the farm sets his own program of work, schedule of effort, and to a large degree the probable return from each operation. Although his is governed strictly by the laws of nature, the scientific growing of crops today rests largely in the hands of the operator. To be agriculturally successful is to cooperate with Mother Nature, taking advantage of the untold opportunities she offers. The farmer's tasks are multiple. It is not the good earth alone which makes him succeed. He must have knowledge of planning, operations management, marketing, and banking. He must choose suitable crops, prepare the land well, harvest and market to his advantage, and control the use of funds expended for every operation.

The farm offers a degree of security not to be found in any other business. Except in unusual instances, income is a product of the individual's effort expended to his best advantage. Farm living lends itself to security in an adequate food supply for the modern family. Although cash money may sometimes be short, good food should always be available.

Farming is the oldest occupation known to man. In recent years it has ceased to be an occupation and has become a business filled with unlimited challenge. At every turn new techniques appear to make farming an exciting enterprise. Recent discoveries which save cost and time as well as assure a good harvest include hybrid varieties, antibiotics, fertilizers, chemical weed killers, powerful fungicides and insecticides, mechanized equipment, and scientific breeding methods. The farmer of today must continue to be a student, if



DR. M. D. FARRAR
Dean of the School of Agriculture

he is to receive full benefit of this challenging program. His chosen field is one that is totally free of monotony.

Historically, agriculture has always been competitive. This has increased through the years. Recent years have produced surpluses that have not received adequate distribution in hungry markets. Success in obtaining agricultural markets under these conditions requires all the background training a student can obtain.

Farming is a family occupation. The farm home represents team work, shared responsibility, and as a result, strong family ties. It is a situation associated with an abundant life. A family reared in a modern farm home enjoys human understanding not to be obtained under any other circumstances.

Farming is a creative job. The products of the farm are essential to the very life of every man, woman, and child. The flow of agricultural produce to outside markets must be maintained, if the people of our cities are to function in their respective capacities. Our industries with higher salary scales have tempted college graduates to leave our rural communities. However, with less people to feed our growing population as the years go by, the time may come when the man on the farm will hold the most powerful bargaining position in the world.

—Dr. M. D. Farrar

Ag Engineers Demonstrate to South Carolina Farmers

By J. DAVID MARTIN, Ag. En. '55

For many years past Farm and Home Week has been an annual affair at Clemson College. During this week, the agricultural division of the college works jointly with the South Carolina Soil Conservation Service to show new and better methods of farming and farm living to the people of South Carolina and surrounding states. This event is held annually during the month of August.

For the modern farmer who is dependent on machinery, Agricultural Engineering is one of the most important aspects of the program. He has to know his equipment and what it will do before it will be of any profitable use to him. The four main phases of Agricultural Engineering are farm machinery, farm structures, soil and water control, and rural electrification. During Farm and Home Week a demonstration and display was presented on each phase. One outstanding feature of the display was a tractor which had the engine, transmission, and differential cut away in order to show every moving part. Every type of machine from the largest cotton picker or harvester to the smallest garden tractor or power saw was here during the week.

In the big exhibit tent on Bowman Field were exhibits of Farm and Home equipment and supplies. Among these were such items as home freezers, water systems, stoves, and models of farm structures and buildings. Several wood preservative concerns presented models of the correct procedure to build a fence. One concern, which has just come out with "Wolmonized Lumber," had a scale model layout of the plant showing how the lumber went through the preservation process. Another interesting model was of a pole barn using treated poles. In another was an exhibit of the farm uses of aluminum. This ex-



A land clearing demonstration using heavy modern equipment during Farm and Home Week. (Photo courtesy Clemson College Extension Service)

hibit proved that aluminum is not confined to roofs alone anymore.

Tuesday morning a discussion on "Problems in Storing Grain" was held in the Agricultural Engineering Auditorium. That afternoon a large crowd witnessed a demonstration of land preparing equipment at Cherry Farm. At the same time a tour of irrigation experiments was conducted. This tour took the participants to see several of the many experiments which the college is presently conducting.

Wednesday morning was devoted to conferences and meetings to inform the members of different organizations throughout the state of the latest changes in agriculture. Wednesday afternoon there was a land clearing demonstration on the Agricultural Engineering Farm across the Seneca River with large equipment furnished by various machinery companies.

While thinking about irrigation let us return to Bowman Field where we find two tractors with mounted irrigation pumps which had just been developed by the college.

After the demonstration on irrigation a good many questions were brought up on irrigation, therefore a "Question and Answers on Irrigation" session was composed of H. P. Lynn, O. W. Beale, W. P. Law, T. C. Peele, and W. A. King, all of whom are experts on irrigation.

To wrap up a big week, a demonstration of silage harvesting equipment was held Thursday afternoon at Cherry Farm. The proper procedure for adjusting and harvesting the silage was shown at that time.

The student branch of the American Society of Agricultural Engineers was on hand at all field demonstrations selling cold drinks for the refreshment and benefit of all concerned.

Over the Hills . . . To the Sea

WILLIAM C. DAILY, Agronomy '56

Upland, lowland, mountains, to the sea;

Richland, poorland, South Carolina for me.

The agriculture in South Carolina is what it is largely because of the soils which it possesses, and the soils are what they are mainly because of the geological and climatic conditions to which they have been subjected. Geologically, South Carolina is divided into distinct regions, the Up-country and the Low-country, with the division coming at the fall line. Since the fall line was once the coast of the Atlantic, it is easy to account for the variation in the soils found in these two regions. Half of the state, the western half, is probably the oldest land mass on the face of the earth, and the eastern half, the Coastal Plain, is of rather recent formation, having been pushed up by the bottom of the Atlantic Ocean only a few million years ago. On the basis of climate, the soils of South Carolina can not so readily divide into subdivisions, probably the most important factor that has influenced soil development in South Carolina. The principal climatic factors that have influenced soil formation are temperature and rainfall. The temperature of the state may be intermediate, between that of tropic and of cooler zones. Because of the non-extreme temperatures and the fact that we are so far south, the decaying process, of both organic and inorganic soil matter, goes on to the extent of twelve months out of the year. Consequently the rocks which were exposed at the surface have been thoroughly decomposed, and the resultant clay, kaolin for the most part, is one of the poorest clays that we could have, when compared from a fertility and water holding standpoint. Because

of the rapid break down of organic matter caused by the high temperatures, it is extremely difficult to maintain a humus content in the cultivated soil anywhere near that found under virgin conditions.

South Carolina has a rainfall which ranges from 45 to 55 inches. The leaching effect on the soil's fertility of the passage of this water has been tremendous and disastrous. As a result, the greater part of the soil's reserve supply of fertility has been leached. Therefore, we have been left with land which is relatively poor compared to some of the richer soils of this country. The type of vegetation, for instance, trees and grass, which is natural for an area has a profound effect on soils of that region, but this factor is largely determined by the climate. South Carolina's soils may be classified as timber soils, because their natural vegetation is trees. There have also been other factors which have helped to lower the fertility of our agricultural land such as the continuous cropping of the soil, non-control of erosion and the employment of poor fertilization practices. Our soils are rather infertile because they were produced under environmental conditions which are found in South Carolina. This state is just too far south and has too much rainfall to have highly fertile soil.

Thus far only the climate has been brought into the scene, but the geology has its part and left its stamp on the soil. The geology of the Coastal Plain is, as has been stated, quite different from that of the Piedmont. The soils of the Coastal Plain, or Low Country, are made up largely of quartz sand that was placed there by ocean currents, and, as would be expected, the coarser soil particles are found near the fall line and the smaller particles near

the coast. They were thoroughly leached before they were laid down, and have been leached since. It is harder to maintain the organic matter supply of these soils than it is the heavier soils of the Piedmont.

Since the soils of the Coastal Plain are open, loose, and porous, they offer to our crops a much better media for root development than do the soils of the Piedmont. Because of these characteristics, together with the fact that they are even poorer than Piedmont soils, they respond wonderfully to correct applications of commercial fertilizer, barnyard and green manures. It is easier to correct the pH of the soils of the Coastal Plain than that of the Piedmont because of their low clay content. All these factors explain the reason why the soils of the Low-Country can be made the most productive in the State, although they may be the lowest in total fertility.

As stated before the soils of the Piedmont are much older than those of the Coastal Plain. These soils are heavier and in many areas seriously eroded. Their silt and clay content is much higher than in the soils of the Coastal Plain. The soils of the slate belt, which are located just north and west of the fall line, are composed largely of silts. Most of the slate soils are of low fertility and as a whole they are characteristically deficient in potash. This latter characteristic is also true of some of the soils found in middle Piedmont, such as the Iredell and the Davidson soil series. In fact, these latter soils are often so heavy that they are referred to as "push dirt" soils, but because they contain a relatively high percentage of the bases they are good livestock soils; they are capable of producing abundant yields of grass and forage.

(Continued on page fourteen)

Meet New Ag Professors

J. T. Lazar . . W. C. Godley . . J. W. Jones . . H. E. McLeod

Dr. J. T. Lazar was reared on a diversified farm at Florence, S. C. In 1943 he received his Bachelor of Science degree in Dairying at Clemson. He then served with the navy during World War II as a lieutenant. After returning from active duty, Dr. Lazar attended Cornell University where he received his Master of Science degree in 1946. He then went to North Carolina State and obtained his Ph.D. in the summer of 1953. Dr. Lazar is now Associate Professor of dairying here at Clemson. He is also manager of the dairy plant and store. During the summer, Dr. Lazar spends his time doing research work for the Dairy department.



DR. J. T. LAZAR

* * * *

Dr. W. C. Godley obtained his Bachelor of Science degree from Clemson in 1943. Upon graduation he entered the Army and served with the Infantry in the European Theater. After the hostilities in Europe were over, he was released from active duty as a Captain. He then returned to Clemson where he taught in the Animal Husbandry department for three years. In 1948, Dr.

Godley resumed his studies at North Carolina State, where he received his Master of Science degree in 1948, and his Ph.D. in 1951. Dr. Godley is now married to the former Miss Alice Hogarth of Brunson, S. C., and they have three young daughters.

* * * *

Dr. J. W. Jones, who was recently appointed director of agricultural teaching, is a person who takes a sincere interest in all phases of agriculture, but his more specialized work has been in agronomy. He is quite capable and very eager to be of service to students in all fields of study.

Dr. Jones received his B.S. degree in agronomy from Clemson in 1937. When he graduated he was presented the award for the highest scholastic record in the agriculture department over a four year period. In the fall of 1938 he entered Cornell University where he received his master of science degree. After securing his master's degree, Dr. Jones continued his studies at Cornell and was also awarded his Ph.D. from that institution. Dr. Jones returned to Clemson in the fall of 1938 and served as an agronomy instructor until 1941.

Dr. Jones entered the army as a second lieutenant in 1942 and served with the Infantry until 1946, when he was discharged with the rank of captain. After he was discharged, he returned to Clemson as associate professor of agronomy. In the fall of 1953 his sincerity and abilities were rewarded by his appointment as director of agricultural teaching.

* * * *

J. R. Pauling, a 1926 graduate in dairying, is now agriculture specialist with the United Nations with headquarters in Rome, Italy.

* * * *

Dr. G. H. Wise, who graduated in dairying in 1930, is head of the Animal Nutrition Section at North Carolina State College.

Mr. H. E. McLeod spent his boyhood days on a farm at Rembert, S. C. He attended Clemson, and in June, 1951 obtained his Bachelor of Science degree in Agricultural Engineering. Upon graduation he entered the armed services as a second lieutenant and served with the Ordnance Corps in Korea for seventeen months. He was released from the Army in July, 1953 as a first lieutenant. Mr. McLeod is married to the former Miss Beth Carwile of Abbeville, S. C. While a student here at Clemson, Mr. McLeod was very active in student organizations. He was President of the American Society of Agricultural Engineers, President of the Wesley Foundation, student Secretary of the Y.M.C.A., and was a member of Blue Key and the Tiger Brotherhood. At present he is serving as an Associate Professor in the Agricultural Engineering Department.



MR. H. E. McLEOD

* * * *

After completing the two year preforestry program at Clemson, Harlan Joye transferred to the University of Michigan to continue his studies in forestry on a university scholarship.

A Brief Glance at Flower Arranging

R. J. DONALDSON, Hort. '55

Love of flowers is virtually instinctive in human beings. Concurrent with this affection is a desire to arrange and display flowers and dress the home with their beauty and fragrance. In the Orient, flower arranging has been practiced for hundreds of years and in Japan this skill enjoys the esteem of a fine art.

Flower paintings dating back to 1700 shows early arrangements of the Western world as lavish in color, material, and style. Oriental arrangements are quite different and follow a severe, stylized line. Principles and rules have developed as guides for arrangers, but the prime purpose of flower arranging is self-expression. Most modern arrangers use a combination of Eastern line and Western exuberance and let their imaginations give expression guided by a foundation of established principles.

The basis of any good flower arrangement is common sense and complete freedom of expression.

Some people are gifted with a sense of form and color and have no

need for rules. The average person, however, profits by learning and following the basic principles and techniques.

Design is the basic pattern of flower arrangement. It consists of a planned relationship among the components parts — flowers, foliage, and container. A design should have a definite relation to its place in the home. Several of the most popular arrangement designs are variations of the triangle, the circle, and an open S curve.

Scale is achieved by selecting materials reasonably related in size to one another and to their container. Suggested measurements for the arrangements proportions are at least one and a half times a tall container's height, or about one and a half times a low container's width. Visual weight of material and container is an important consideration also.

Balance is the grouping of materials within the pattern so that an impression of color and stability is created. Balance is achieved by working from light, delicate forms

at the edges of the arrangements to darker, heavier materials at the center. A properly balanced arrangement looks good from any viewpoint.

Color is always a factor of arrangements. It may be used in many ways. Grouped color is more effective than spotty or mixed color. Dark heavy flowers are best used at the base or center while buds and lighter smaller flowers are used near the edges of the arrangement. warm colors such as red, orange, or yellow give striking effects. Cool colors, such as blue and violet, and the pale tints give a quiet, delicate effect. Grouping different shades of one color makes an interesting bouquet.

Focus is the center of interest in an arrangement. The eye should be led to this natural center of interest. Where the main lines of the design cross, there must always be a high light of choice plant material, never a void.

Rhythm is the feeling of motion in an arrangement, achieved by graceful lines curving through the arrangement and leading to the center. Plan these lines while building the design and before filling it in.

Accent is the emphasis placed on a special area of the composition by giving it special prominence. Accent is acquired by contrast in color, size, form, or texture, or by incorporating unusual but harmonious materials.

Harmony is created in a flower arrangement by assembling the materials so that the result expresses an idea. The finished composition is harmonious when the plant materials, container, accessories, setting, and arranger's artistic effort have been perfectly blended.

This article was not intended to train the layman in the complex art of flower arranging but only to present several of the principles involved and to attempt to arouse in the readers a desire to investigate further.

SELL or TRADE . . .

Your Wheat

with

**ALLEN BROTHERS
MILLING COMPANY**

COLUMBIA

GREENWOOD

Keeping Our Crops Healthy

CLAUDE L. MULLWEE, VAE '54

One of the many government organizations which is silently working to protect the farmer from the disastrous effects of plant diseases and insects is the South Carolina State Crop Pest Commission.

This commission was established in South Carolina in 1912 by an act of the General Assembly and is composed of five directors who are members of the Clemson College Board of Trustees. The directors appoint a State Pathologist and a State Entomologist, who are directly responsible for carrying out the work of the commission.

The members of the commission in this state are: Dr. G. M. Armstrong, State Pathologist, Dr. M. D. Farrar, Entomologist, Mr. G. M. Anderson, Assistant State Pathologist, Mr. J. A. Berly, Assistant Entomologist; Mr. W. H. Purser, Assistant Entomologist; Mr. J. K. Reed, Associate Entomologist; Mr. C. A. Fennell, Assistant Agronomist; Mr. D. H. Horton, Assistant Agronomist; and Mr. R. H. Garrison, Associate plant breeder in charge of seed certification.

The purpose of the commission has been stated as, "To protect the South Carolina growers from the menace of buying infested nursery stock so that they may gain and hold profitable markets and compete with growers in other states."

The field inspections of the commission are carried out principally by Mr. J. H. Berly and Mr. G. M. Anderson, although part-time inspectors have been hired during the summer months.

Any producer of nursery stock must have his products inspected before they can be sold on the commercial market. After being inspected and passed, the producer is issued a tag which must accompany every shipment of his stock, whether it is sold within, or out of the state. If a nurseryman desires to import stock from another state he must file a certificate with the South Carolina State Crop Pest Commission secured

from the state inspector at the source stating that the stock is clean and free of insects.

Although nursery stock is subjected to rigid inspections, it must still be fumigated with hydrocyanic gas before shipment as an added precaution against any insects which may have been overlooked by the inspector.

An additional act of the State General Assembly in 1922 charged the Commission with the protection of the South Carolina beekeepers from several brood diseases which were threatening to cause serious losses to the industry. As a result, all bees shipped within, out of, or into South Carolina must be inspected and determined to be free of any diseases. By the rigid enforcement of these control measures, the diseases have not become prevalent in this state.

The inspectors of the S. C. State Crop Pest Commission contact annually about 250 nurseries, 54 greenhouses, and many small scale stock producers. A minimum of one inspection is made on all commercial stock except sweet potatoes, which

are required to have a minimum of three inspections because of the importance of the industry in the state.

In addition to the inspection of nursery stock, the Commission also has the authority to regulate the sale and distribution of insecticides in this state. This control measure was taken to protect South Carolina farmers from experiencing losses due to the purchase and use of products of inferior quality which would flood the market were it not for controls.

Paralleling the work of the State Crop Pest Commission, but differing in scope, is that of the Extension Service Plant Pathologist and the State Experiment Station. Their main effort in disease control is directed more toward the individual farmer, rather than the commercial nurseryman.

Years ago farmers in South Carolina experienced crop failures year after year because of destructive diseases and insects, and yet they failed to take adequate control measures to eradicate these profit consumers. Why was this true? It was

(Continued on page fifteen)

Deming Pumps

AND

Water Systems

FOR THE

Farm and Home

COLUMBIA SUPPLY CO.

Phones: LD-64 - 5121

COLUMBIA, SOUTH CAROLINA



BETWEEN



CLEMSON COLLEGE DAIRY TEAM WINS HONORS

The men pictured below are the leaders of the College Dairy Judging Team who won honors at the Southern Intercollegiate Dairy Cattle Judging Contest held at Memphis, Tennessee. Members of the team are: (left to right) A. L. McCaskill, Jr., Bishopville; Joe Lee, Landrum; B. M. Sanders, Orangeburg; and C. C. Brannon, coach of the team. The college is very proud of the record these men made for themselves and the school. The team won first place in judging all breeds of cattle and first place in judging Guernsey cattle. Sanders and Lee took first place honors in the Jersey and Guernsey contest for high individuals.

ALPHA ZETA RECEIVES SIX NEW MEMBERS

The six new members of Alpha zeta, national honorary agricultural fraternity, were formally initiated into the South Carolina chapter at the regular meeting held Monday night, November 9.

Those men that were initiated were Robert J. Donaldson, horticulture junior from Mt. Pleasant; Edgar Walton Jones, Vocational agricultural education senior from Murrell's Inlet; Edwin Franklin Nolley, vocational agriculture education senior from Mocksville, N. C.; Clarence Kenneth Palmer, vocational agricultural education senior from Sen-

eca; Niles Craig Clark, Jr., animal husbandry junior from Waterloo; and James K. Henderson, dairy junior from Clemson.

During the past year, the fraternity of Alpha Zeta has taken the responsibility of publishing the AGRARIAN, official publication of the School of Agriculture, and are now sponsoring the 1953 Agricultural Fair.

AGRICULTURAL FAIR IS GREAT SUCCESS

The bi-annual Agricultural Fair was one of the major attractions at Clemson during the recent Homecoming Weekend. Several thousand visitors made the rounds through the Agricultural Buildings and livestock barns to view the newest developments in scientific agriculture and to marvel at some of the freaks of nature.

The fair was sponsored by the Fraternity of Alpha Zeta and each of the major departments in the School of Agriculture.

SEARS, ROEBUCK SCHOLARSHIPS WINNERS ANNOUNCED

Professor D. B. Rosenkrans has announced that the annual Sears, Roebuck award of \$250.00 is given this year to Richard F. Elliott of Rimini, S. C. The award is given to the sophomore who makes the highest scholastic average as a freshman Sears, Roebuck scholar.

The Sears, Roebuck Agricultural Foundation has made funds available for thirteen one-hundred-fifty dollar Sears, Roebuck scholarships to be awarded to members of the freshman class on the basis of a competitive examination. The awards go this year to the following: Carol E. Brown, Kingstree, S. C.; James Bryan Carter, Loris, S. C.; Willie Lee Corley, Lexington, S. C.; Joyce Edison Cox, Loris, S. C.; Alva W. Dickens, Marion, S. C.; James Freddie Ligon, Easley, S. C.; James Belton Littlefield, Woodruff, S. C.; James Harold Poore, Seneca, S. C.; Benjamin T. McDaniel, Pickens, S. C.; Jimmie A. Richardson, Lancaster, S. C.; Don Buford Still, Blackville, S. C.; Leonard O. Wilson, Fort Mill, S. C.; and Gerald W. Truesdell, Kershaw, S. C.

FURROWS



SALTERS TO ATTEND NATIONAL CONVENVENTION

Jackie Salters of Trio, South Carolina, will represent the Clemson chapter of Block and Bridle at the National Block and Bridle convention which is to be held in Chicago, Illinois, on the 3rd of December. Jackie is president of the local chapter, and was chosen to represent the club by the active membership, which is about 75. Have a good time, Jackie!

THESE LAMBS DIDN'T GO ASTRAY

The Block and Bridle Club of Clemson College took in approximately 15 new members, LAMBS, into the club on the night of the 22nd of November. There was a Barbecue dinner given in their honor. The Block and Bridle Club is one of the biggest and most active organizations on the campus.

THE FUTURE LEADERS OF THE COLLEGE

The men pictured below are the leaders of the freshman class for the present school year. They were elected by popular vote by the members of the freshmen class. They are (seated) John Duffie; Sumter, President; standing (left to right) Richard Kemp, Denmark, Representative; Tillman Johnson, Aiken, Vice President; Lewis Cromer, Greenwood, Secretary; and Carol Brown, Kingstree, Treasurer. (Back row left to right) Representatives Don Still, Blackville; M. C. Morgan, Great Falls; and Preston Stokes, Charleston. Tom Brown of Bakersfield, California was absent when the picture was made.



QUEENS! QUEENS! QUEENS!

It was a great pleasure for the Clemson Cadets to play host to another group of beautiful ladies competing for the Maid of Cotton title.

The three lovely young ladies pictured below won top honors in the contest. Miss Barbara Cates (center) is the new South Carolina Maid of Cotton of 1954. Miss Cates is shown with Miss Alice Rustin of Columbia (right), first alternate; and Miss Anne Evans of Camden, (left) second alternate. Miss Cates will compete for the national title in Memphis, Tennessee, in January.

Miss Cates represented Spartanburg County in the contest.



Will Cooperatives Work in the Carolinas?

W. E. BYRD, Ag. Ec., '54

Cooperatives, generally speaking, are not very familiar to most Carolinians. The southeast has often been spoken of as a "desert for co-operatives."

There are several reasons for this. One is that in the past cooperatives were not properly organized, and as would be expected, were unsuccessful. A second reason is that people expected too much from the co-operatives, but like other forms of business, cooperatives have their limitations. A cooperative can aid the farmer in getting better services and higher prices to a certain extent but cannot fix prices or get the producer all of the margin normally going to the so called middleman. After all, most middlemen do perform a necessary function.

There are three main types of farmer cooperatives. The **purchasing cooperative** aid in getting farmers equipment, supplies, feed, and

seed at reduced cost. Examples of these are the Farmer's Federation of Asheville which serves Western North Carolina and the Farmer's Co-operative Exchange (F. C. X.) which serves both of the Carolinas. Both of these cooperatives may also be classed as belonging to the second group of cooperatives, namely the **marketing cooperatives**. The Federation also belong to the third type, the **service cooperative**. The forms of marketing carried on are, for example, the broiler business of the Federation and the buying and selling of grain and seed as practiced by the F. C. X. The freezer locker plants operated by the Farmers' Federation provide one example of a service cooperative. Some marketing co-operatives also engage in certain kinds of processing.

Other examples of service cooperatives would be the Rural Electrification Administration which supplies electric power and telephone serv-

ice over some of the more sparsely populated areas of the State. The R. E. A., unlike other cooperatives, was started by the federal government which financed the original investment through a long loan which is being paid back by the users of these services. There are also the Production Credit Associations and the National Farm Loan Associations which finance farming operations and purchases of land. These were originally sponsored by the federal government but are now almost wholly farmer-owned and controlled.

It should be noted that the sales (marketing) cooperatives may be divided into two distinct groups, both of which are existing in the Carolinas. One is the type of cooperative which actually takes title to the commodities that are offered for sale by the producer. In this type of business, the producer is paid by the cooperative as soon as the products are weighed and graded when the two parties agree on a price. The second type of cooperative is quite common in vegetable, fruit, and livestock cooperatives both in the state and elsewhere. It is the one where the cooperative acts as an agency for the producer in selling the agricultural products and the farmer must wait for the cooperative to find him a buyer before he receives payment for his farm products.

Although there is no proof as to how cooperatives will work on a large scale in the Carolinas, it may be observed that cooperatives have proved to be quite successful in the north central states as well as in the state of California. These cooperatives have benefitted the farmers in decreasing the cost of marketing and increasing their final checks. How large scale cooperatives will result in the Carolinas is unknown, but by observing the smaller units in the South, it may be concluded that co-operatives plays an important role in agriculture.

"One of the best in the South. . . ultra-modern. . .", says



Clemson
House



In the foothills of the beautiful Blue Ridge Mountains, you'll find the Clemson House located in a unique setting - right on the campus of Clemson College. Here you will find all of the services of a great metropolitan hotel yet you will be far away from the noise of a large city. And you'll enjoy the beautifully landscaped grounds and the flower beds. The splendid accommodations and the excellent cuisine offered at the Clemson House are combined with warm friendly hospitality and fine service. The Clemson House is a gem among fine hotels and the rates are almost unbelievably low. All public rooms are air conditioned. Four dining rooms and the Tiger Lounge and Coffee Shop. There is swimming, fishing and golf nearby.

Fred L. Zink, Jr., Manager

On East Edge of Clemson, S. C. On U.S. 78, 123 & State 28

NEWS BRIEFS

By DOUG OWENS, News Editor

Jack D. Early, one of the graduates of entomology in February of 1953, is doing graduate work here at Clemson.

* * * *

Harold E. Walker, who graduated as an arts and science major in 1948, is back at Clemson doing graduate work in entomology. Harold decided to come back to school after teaching four years at Anderson Junior High School.

* * * *

Dr. Edwin B. Collins, who graduated in dairy in 1943, is dairy bacteriologist at the University of California, Davis, California.

* * * *

Dr. L. R. Arrington, a 1940 dairy graduate is biochemist at the University of Florida.

* * * *

T. C. Breazeale, Jr., who graduated in dairying in 1942, is zone sales manager for Southern Dairies in Knoxville, Tennessee.

* * * *

E. L. Corley, 1949 graduate, is completing the required work for a Ph. D. degree at the University of Wisconsin. He has been an instructor in the Department of Dairy Husbandry for the past year.

* * * *

Peter McCall, a 1953 graduate in agronomy, is now doing graduate work at the University of Wisconsin. While attending Clemson, Peter was advertising manager for The Agrarian.

* * * *

Pat Fulmer, a horticulture graduate, is working on his master's degree in entomology here at Clemson.

* * * *

H. J. Sefick, professor of horticulture at Clemson, is carrying on a breeding program with grapes. He is breeding a seedless variety which is resistant to anthracnose disease. There is much hope that he succeeds.

The new varieties of Southern High Bush blue berries, resulting from breeding, are larger, and smaller seeded, than the old variety. They also have good quality. They look like a good bet for the home garden.



Wooing the Moos

100 Lbs. Net.

Suni-Citrus Pulp
mineralized

"They Moo for More"

MANUFACTURED BY
SUNI-CITRUS PRODUCTS CO.
HAINES CITY, FLORIDA

Cows Love Suni-Citrus Pulp

Suni-Citrus is rich in milk-making units, brimming with bovine health and happiness. That's why—
"They Moo For More"

Suni-Citrus Products Co
HAINES CITY, FLORIDA
Sales Agent: ASHCRAFT-WILKINSON COMPANY, ATLANTA, GEORGIA

For the very best
In dairy products

give your order to

Pearman's Dairy
ANDERSON, SOUTH CAROLINA

FRED E. PEARMAN, Proprietor

Est. 1932 Tel. 1717

AUTUMN MEDITATIONS

By JOE O'CAIN

• • Church rafters vibrate
From organ swell;
Then, growing calm again,
Intense become my heart.
Autumn leaves,
Bronze asters
Nipped by December's frost,
Somber faces,
White candles,
And prayer
Make such a quiet church
At Communion.

Then I knelt upon the velvet altar, Love and Life,

Twin brothers,
Encircled me, guided me, and lead me.
The music stopped, but the candles glowed
Like Chivalry spears

I prayed humbly.
And God spoke to me softly.

"This is my body

Broken

For you.

This do

In remembrance of me."

Sweet Communion.

• • If He called
I could not answer,
For Life I have not lived

• • One brown chestnut,
A lost leaf —
Crimson,
An azure sheet stretched as
Eternity's sign,
One thrust of pain
And wisp of dying beauty
From Earth's sweet womb:
For these —
Dear Master —
Thanks.

• • I see a red-cloaked world take form,
And fire and clouds and vapor rise
And vesper's scarlet arches rise
From melted-marveled azure skies!
I hear a new hymn in this world
And the sleepy, peaceful notes sublime
Bid a farewell celestial, song divine
"Farewell, old earth"; this rose is mine!

PRAYER OF THANKSGIVING

For food of thought and food of mind,
And bodies free from sin—
For strength and wisdom of this day,
We ask, dear Lord, Amen.

—Joe O'Cain, '54

Compare . . .

PET HOMOGENIZED MILK



AND

PET ICE CREAM

with any other

OVER THE HILLS . . . (Continued from page six)

Most of the soils of the Piedmont, however, are made from granite. These soils are of sandy texture and fairly well drained. Up-Country soils are more fertile than those of the Coastal Plain, and yet, on the whole, their physical characteristics are not as good, and plant roots cannot develop as well in them.

Thus, temperatures, rainfall, and geology have all contributed to the making of South Carolina's soils. The present characteristics of South Carolina soils are a result of the inter-action of these and related factors, plus, of course, the influence of man since South Carolina was settled. Taking all these factors into consideration, we might even go so far as to philosophize and say that there is much more in land than there is in the man.

KEEPING OUR CROPS HEALTHY

(Continued from page nine)

simply due to the fact that the average farmer didn't have at his disposal the information that has resulted from years of intensive research in the field of Plant Pathology, and the specialized personnel that are available today.

If a farmer finds that some disease has attacked his crop, it is a simple matter to secure accurate disease identification and sound control recommendations. County agents or local agricultural teachers are usually able to provide this information for the most common diseases, but if the disease is beyond their scope, the problem can be referred to the State Extension Service Pathologist, or the State Experiment Station where the services of specialists in the art of disease control are offered the farmer.

For the least financial loss and most effective control of a disease, a farmer should seek and employ measures as soon as the disease is discovered. If he desires outside help in identifying a disease, he should select a plant exhibiting well defined symptoms of the disease in question in its active stages of development. If it is necessary to ship the plant, it should be packed in such a way as to prevent drying or crushing while enroute. A far greater number of definite identification of diseases can be expected if the Pathologist receives fresh material as compared with the result that can be expected from a diagnosis performed on dried or crushed material.

In order for the South Carolina farmer to successfully compete with the other farmers of the world and increase his profits, he should employ every possible means to insure disease free crops.

Dr. G. M. Armstrong, head of the botany department, and his wife, Dr. J. W. Armstrong, gave two papers on wilt diseases at the meeting of the American Institute of Biological Sciences held at the University of Wisconsin, September 7-9.

* * * *

Mr. Van Blaricom, professor of food technology at Clemson, presided over several of the scientific sessions at the meeting of the American Society of Horticulture Science. These meetings were held September 7-9 at the University of Wisconsin.

Duane Rosenkrans, a 1948 graduate in agronomy, is now agriculture extension editor for the State of Mississippi. While at Clemson Duane was co-editor of The Agrarian, national president of the student activities section of the American Society of Agronomy, member of the Alpha Zeta, and member of Phi Kappa Phi. Duane is the son of Professor Rosenkrans in the botany department.

* * * *

Harry Lightsey, another former editor of The Agrarian and also a

1952 animal husbandry graduate, is now a sophomore in the school of veterinary medicine at the University of Georgia.

* * * *

John Pitts, Agrarian editor in 1950 is now connected with the sales promotion department of the Spartan Grain and Mill Company.

* * * *

Charles M. Brown, agronomy graduate in 1950, is now completing his graduate work toward a Ph.D. degree at the University of Wisconsin.

CONTINENTAL GRAIN CO.

ANDERSON & EASLEY, S. C.

Buyers of All Farm Grains

Manufacturers of

Arrow and Sunny South Feeds

for

LIVESTOCK and POULTRY

Pendleton Fertilizer

Issaqueena Feed

Cottonseed Products

Certified Cottonseed

Insecticides

PENDLETON OIL MILL

PENDLETON, SOUTH CAROLINA

Off Campus Training

By GENE NORRIS, VAE '54

Beginning the second semester, 1953-54, seniors in Vocational Agricultural Education will have the opportunity of doing their "practice teaching" in high schools in various parts of the State.

This new program is referred to as off-campus practice teaching. Under this program seniors majoring in Agricultural Education are being sent out into various parts of the state to teach for six weeks. Before going out, they must complete their theory work in the first nine weeks of the semester. This means that some courses must be more intensive and completed in a shorter time. After teaching for six weeks, the student teachers return to the campus for a three week review period to evaluate their activities and correct any apparent weaknesses.

In order to effectively carry out such a program the student should not carry over eighteen credits, six of which will be practice teaching and the other twelve consisting of education courses and Military Science. The Military Science Department has consented to the accelerated nine week program for student teachers.

In the past, the practice teaching program has been carried out in the nearby schools. However, there are many advantages of having the student teachers get their experience off-campus in various schools of the state. First, the student can concentrate entirely on his teaching without college duties or other classes to interfere. Authorities have found that the student teacher learns more about teaching vocational agriculture when he becomes an integral part of the school and community by participating in the church activities, school organizations, F.F.A., P.T.A., and individual work with pupils. This program also offers the student teacher an opportunity to find out if he likes teaching. Another reason for establishing the off-campus program is to give the student teacher a chance to teach in a community where the type of farming is similar to that which he prefers after graduation. Heretofore it was only possible to train seniors to teach in the type of farming found around Clemson.

The off-campus program was in-



Outstanding agriculture teachers who were selected to assist in training student teachers.

Front row left to right: J. M. H. Clayton, Belton High; C. W. Pennington, Anderson High; Floyd Johnson, York High.

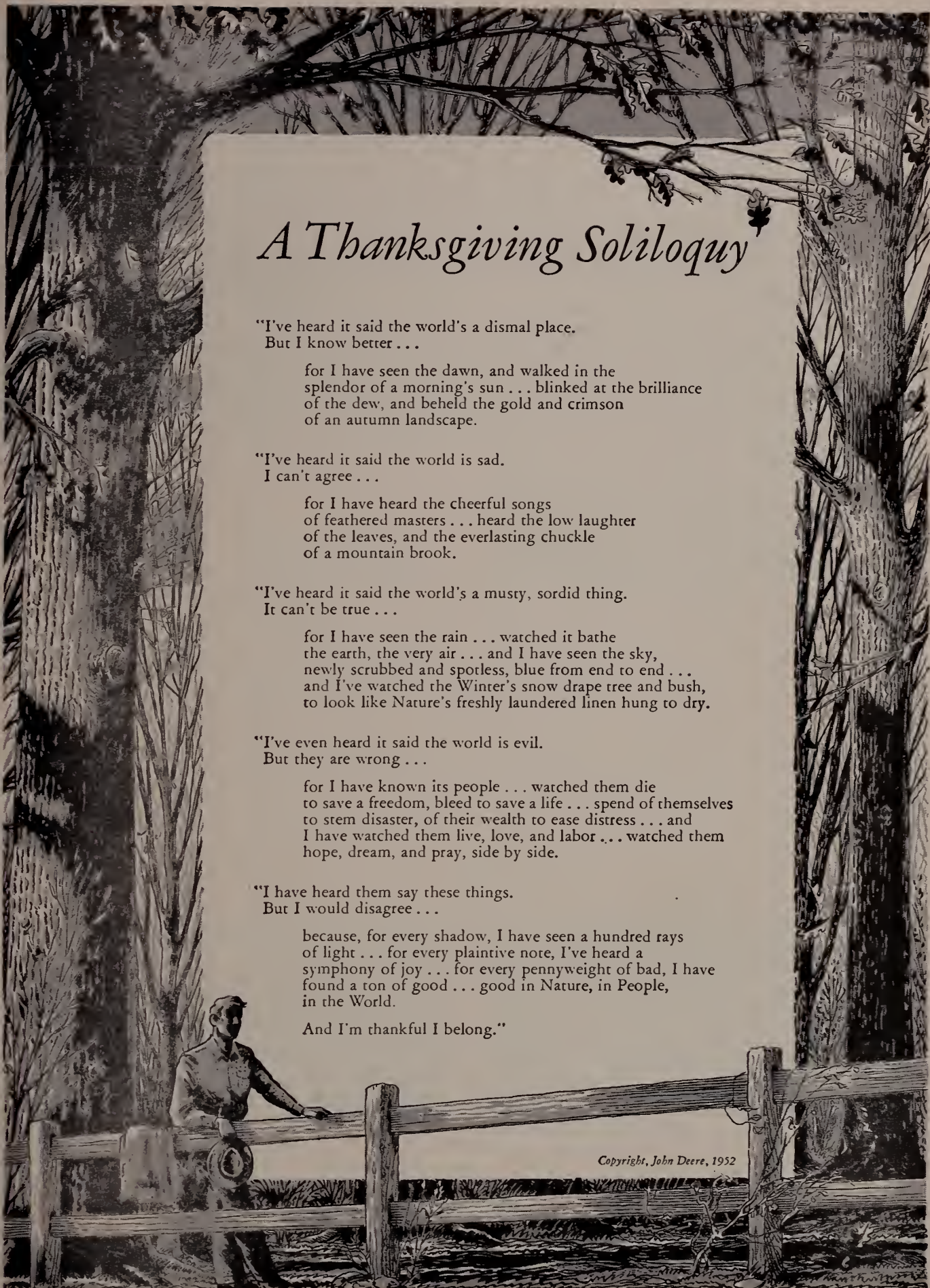
Top row W. F. Moore, Taylors High; C. H. Cooler, St. George High; Boyce Todd, Saluda High; Frank Chastain, Central High; F. E. Kirkley, Associate Professor of Agricultural Education, Clemson; Lewis Carter, Wampee High; A. L. Smoak, Jr., Smoaks High; H. L. Stoudemire, Mullins High.

roduced to Clemson after a careful study was made by the State Supervisor of Education and the teacher trainers of Clemson. The results of their findings indicated that this program was the most desirable method to train future teachers. Georgia has used this program successfully for a number of years. Practically all other states are using off-campus training.

Under this new program, only the best teachers in the state are used as supervisory teachers. To assist in this program, ten teachers have been chosen on the basis of their outstanding work in teaching agriculture and community development. These are as follows: Lewis Carter, Wampee; J. M. H. Clayton, Belton; C. W. Pennington, Anderson; Floyd Johnson, York; W. F. Moore, Taylors; C. H. Cooler, St. George; Boyce Todd, Saluda; Frank Chastain, Central; A. L. Smoak, Smoaks; and H. L. Stoudemire, Mullins. One or two student teachers will be sent to a school for the training period. These men will live in the community and serve as assistant teachers in the various activities of the local department. Seniors desiring to live at home or to teach in their home com-

munities are discouraged by the teacher trainers because of discipline problems often incurred by familiar pupils and because of other inconveniences such as social obligations. The College has made arrangements to make refunds on laundry, room and meals while the student is away from the college.

The program under each supervising teacher will vary to some extent, although all will follow practically the same pattern. During the first week, the student teacher will observe the local teacher, study the local program and get acquainted with the students. After adequately observing the supervising teacher and visiting the pupils on their farms, the student teacher should know what materials he will need to use and be ready to begin teaching the second week. He will be expected to teach every day until the remainder of the six weeks are finished. His teaching experiences will include classroom discussions, farm shop, use of visual aids, and field trips. Close supervision by both teacher trainers and the supervisory teacher is necessary in order to develop the student and evaluate his progress.



A Thanksgiving Soliloquy

"I've heard it said the world's a dismal place.
But I know better . . .

for I have seen the dawn, and walked in the
splendor of a morning's sun . . . blinked at the brilliance
of the dew, and beheld the gold and crimson
of an autumn landscape.

"I've heard it said the world is sad.
I can't agree . . .

for I have heard the cheerful songs
of feathered masters . . . heard the low laughter
of the leaves, and the everlasting chuckle
of a mountain brook.

"I've heard it said the world's a musty, sordid thing.
It can't be true . . .

for I have seen the rain . . . watched it bathe
the earth, the very air . . . and I have seen the sky,
newly scrubbed and spotless, blue from end to end . . .
and I've watched the Winter's snow drape tree and bush,
to look like Nature's freshly laundered linen hung to dry.

"I've even heard it said the world is evil.
But they are wrong . . .

for I have known its people . . . watched them die
to save a freedom, bleed to save a life . . . spend of themselves
to stem disaster, of their wealth to ease distress . . . and
I have watched them live, love, and labor . . . watched them
hope, dream, and pray, side by side.

"I have heard them say these things.
But I would disagree . . .

because, for every shadow, I have seen a hundred rays
of light . . . for every plaintive note, I've heard a
symphony of joy . . . for every pennyweight of bad, I have
found a ton of good . . . good in Nature, in People,
in the World.

And I'm thankful I belong."

Copyright, John Deere, 1952

Bee Pollination

By DERRICK BLOCKER, Entomology '54

Have you ever wondered how plants reproduce? They have sexes somewhat as animals do. Some have both male and female organs in the same plant, while others have these organs in different plants resulting in female and male individuals. Regardless of these differences, the pollen from the male organ must be transferred to the female organ if seed is to result.

Pollination is the transfer of pollen from the anther or male element of a flower to the stigma, the female element. This process must be completed before fertilization (the union of the male germ cell with the ovary, or female germ cell) and eventual reproduction can take place. Self-pollination is the transfer of pollen from the anther to the stigma of the same flower or to the stigma of another flower on the same plant. Cross-pollination is the transfer of pollen from the stigma to the flower of another individual plant.

There are many agents necessary for the transfer of pollen, the most common being gravity, wind, and insects. The moist heavy pollen that cannot be carried by wind, are de-

pendent on insects almost entirely. These insects include our native wild bees (bumble bees), leaf cutting bees, alkali bees (carpenter bees), beetles, flies, thrips, moths and many others.

By far, the most important of these insects is the common honeybee, *Apis mellifera*, whose very existence depends upon pollen and nectar from plants. Estimates are that 80% of all pollination by insects is accomplished by our little friend, the honeybee. Yields of fruits, legumes, and vegetable seeds have often doubled or even trebled by the simple addition of adequate numbers of bees.

One peculiarity of the honeybee, is its habit of usually visiting only one plant species at the time in its pollen gathering. This is very fortunate for us, because in this way only pollen that is capable of fertilization is transferred from one plant to another. For example, peach pollen is not transferred to pear trees.

Pollen is used by bees as a source of proteins, fats, vitamins, and other food elements. It is made into a material commonly known as "bee-



Pollinization of clover by a honeybee (Clemson College Extension Photo)

bread" and stored in combs very much the same as honey. Bees are very well equipped for pollen-gathering, the legs being modified for handling this task. An eye brush occurs on the inner surface of the front tibia. The large first tarsal joint is covered with long unbranched hairs, forming a body brush. At the base of the first tarsal joint is an instrument for cleaning the antennae. The hind legs of the worker bear the organs with which it is capable of transporting two large loads of pollen back to the hive. As the bee passes from flower to flower, the body becomes literally covered with grains of pollen. This is the means by which it is transferred from the anther to the pistil. As the bee passes these parts of the flower, pollen adheres to the body of the bee, or plant organ whichever the pollination process demands.

Recent tests in South Carolina have been conducted on the effect of bees on pollination of ladino and crimson clover. In ladino clover experiments pollination by bees proved very profitable by increasing the yield of seed. In crimson clover tests covering five different plots totaling 64.5 acres in five different counties in South Carolina, "the average yield of all fields with no bees was 41 pounds per acre as compared to 212 pounds per acre yield of all fields with bees."*

These tests prove the value of bees to South Carolina farmers, whether they own or rent hives for use on their farms.

*Pollination of crimson clover S. C. Extension Service. Miscellaneous Publication January 1953.

LYNDALE FARMS

BISHOPVILLE, SOUTH CAROLINA

"Guernseys That Produce and Reproduce"

Senior Herd Sire:

LENDOLURE MASTER'S BRANFORD

First five daughters averaged 9,285 pounds milk and 488 pounds fat. All records 305 days and meeting calving requirements.

A. L. McCaskill — owners — A. L. McCaskill, Jr.



Notice how the twists are absorbed throughout the Flexi-Frame, even though the right front and left rear wheels are blocked high off the floor.

A report to you about men and machines that help maintain International Harvester leadership

FLEXI-FRAME

**developed for new
McCormick No. 52 tractor
trailer gives fast, safe "floating ride" hauling**



Here's the No. 52 on a steep roadside grade. Even though the left rear wheel is much lower than the right, the load on the platform "stays put." No matter how uneven the ground, the load is never "tippy."

An all-new principle of wagon design has been developed by International Harvester engineers to make modern farm hauling safer, easier and faster.

The new design includes Flexi-Frame construction, with twin-channel section reaches, to absorb shock and twists. Flexi-Frame causes wheels to glide—instead of bounce—over rough ground with "floating ride" smoothness.

Fixed box supports distribute the load on the axles to

reduce tipping and rocking. Also, wide 68-inch tread and low-built design gives the wagon maximum stability with all types of loads.

Auto-type steering with protected, steel-plate tie bar gives the front end extra strength—yet makes turning easier and eliminates road-sway. The section reaches, sag-proof axles and high-carbon steel spindles are IH quality-built to give many years of trouble-free service.

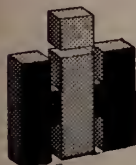


With sides on, the No. 52 Tractor Trailer and McCormick No. 10 box makes an ideal combination for hauling grain, feed, fertilizer.



With sides, off, the No. 10 is an easy-to-load platform carrier only 31 inches high—ideal for hauling boxes, crates, baled hay, straw.

IH engineering teamwork produced the new Flexi-Frame design for the No. 52 tractor trailer. IH research, engineering and manufacturing men are constantly pooling their time and talent to solve farm problems—to provide equipment that makes farm work easier and the farmer's time more productive!



INTERNATIONAL HARVESTER

International Harvester products pay for themselves in use—McCormick Farm Equipment and Formall Tractors . . . Motor Trucks . . . Crawler Tractors and Power Units . . . Refrigerators and Freezers—General Office, Chicago 1, Illinois

-- TALL CORN --

She: I'm a good girl.
He: Who asked you?
She: No one.
He: Then no wonder you're a good girl.

Landlady: How do you like this room as a whole?

Joe: As a hole it's fine; as a room it's not so good.

"If it's funny enough to tell, it's been told; if it hasn't been told, it's too clean; and if it's dirty enough to interest a frosh, the editors get kicked out of school."

* * * *

The words "In God We Trust" were placed on pennies for the benefit of those who use them for fuses.

* * * *

What you don't know doesn't hurt you, but it amuses a lot of people.

* * * *

— DAFFYNITIONS —

A moron: A fellow who wrinkles his brow reading comic books.

Shotgun wedding: A case of wife or death.

Professor: A textbook wired for sound.

Confession magazine: A place where people write their wrongs.

Hamburger: Steak that didn't pass its physical.

Hypochondriac: A man who can't leave being well enough alone.

Better: What every girl should know.

Camel: A warped horse.

* * * *

"That waiter is either a fool or a humorist."

"What's the matter?"

"I ordered extract of beef and he brought me a glass of milk."

* * * *

"Don't worry," said the motorist who'd just run down one of the farmer's sows, "I'll replace your pig."

"You can't," shouted the farmer, "you ain't fat enough."

* * * *

Confucius say, "Wash face in mornin, neck at night."

COBLE

Dairy Products

Seal of Quality

~~~~~  
Buy at The Green and Oval Sign  
~~~~~

ANDERSON, SOUTH CAROLINA

Your Trade Marks for Quality Seed



Producers
and
Distributors of
SOUTHERN
FIELD
SEED



Exclusive Producers of
TABLE JOY Hybrid Sweet Corn
"All McNair's Seed Are Grown on McNair's Farms"
McNAIR'S YIELD-TESTED SEED CO.
LAURINBURG, N. C. Phone 388 or 502

HOW THE UNI-FARMOR HARVESTS



Corn for the CRIB... with the MM UNI-HUSKOR

Here's two-row self-propelled picking-husking that covers acres *fast* . . . takes corn from field to wagon box with less work than ever before. Just one bolt and four pins mount the Uni-Huskor attachment on the Uni-Tractor. These outstanding MM Huskor features mean lower-cost husking . . . cleaner corn . . . a thorough job that gets *all* the crop: Five-position floating snouts; four 53½" long snapping rolls; ten 36" husking rolls; husking radle with rotating and side-to-side action; exclusive MM cleaning fan; roller bearings on all main drives. Built for long, profitable operation, the Uni-Huskor *earns* more, *saves* more, offers *extra value* for every dollar invested.

Corn for the BIN... with the MM UNI-PICKER SELLER

With the MM Uni-Picker Sheller attachment mounted on the Uni-Tractor, *one* man picks, husks and shells corn in *one* trip through the field. Combining all the advantages of MM Shellers, long the world's biggest sellers, with the thorough and dependable picking-husking action of MM Huskors, this revolutionary machine cuts corn harvest costs and time to a new low. What's more, the Uni-Picker Sheller efficiently handles corn with up to 25% moisture content . . . gets corn early, while the stalks are still standing. Cobs and husks stay right in the field to mulch the soil. For high speed corn harvesting that gives corn profits a healthy boost, the Uni-Picker Sheller ranks tops in the field.



Corn for the SILO... with the MM UNI-FORAGOR

Now! New forage harvesting speed and economy that gets corn or hay ready for the silo in peak condition . . . with new machinery savings. It's the new MM Uni-Foragor attachment for the Uni-Tractor . . . with interchangeable heads to handle either hay or corn silage crops. Loaded with advantages like the heavy duty cutting head with four 16" hardened steel knives . . . powerful blower and big-capacity delivery pipes, the Uni-Foragor saves time when time is precious . . . helps get top value from every silage crop.



**THE MM UNI-FARMOR
NOW OFFERS
4 Machines in 1!**



MINNEAPOLIS-MOLINE MINNEAPOLIS 1, MINNESOTA

CAMEL

America's most popular cigarette!



*So Mild -
So Flavorful!*

The Agriarian

OFFICIAL STUDENT PUBLICATION

CLEMSON, S. C.

THE CLEMSON A & M SCHOOL

JANUARY 1954



9 THE COASTAL PLAINS

SERVING THE FARMERS
IN NORTH AND SOUTH
CAROLINA SINCE 1906



Planters
Fertilizer & Phosphate Co.

CHARLESTON, S. C.

CHARLOTTE, N. C.

THE AGRARIAN

Volume 13

The Clemson Agricultural College

Number 2

Edwin F. Nolley
Co-Editor

Joe W. O'Cain
Associate Editor

James K. Henderson
Co-Editor

John M. Turner
Advertising Manager

Jackie Sanders
Business Manager

Alva L. McCaskill
Circulation Manager

Jerry Hammett -- Feature Editor

Ray M. Buck ----- Dept. Editor

Douglas Owens ---- News Editor

Departmental Writers—

William C. Dailey, W. D. Barton, E. M. Rast, Bill Pressley, William E. Byrd, Gene Norris, Derrick Blocker, Claude L. Mullwee, Jimmy Young, J. David Martin, Tommy Eleazer, Jack D. Edwards.

Advertising Staff—

Wilson K. Kaiser, Thomas E. Hayden, Baxter M. Hood

Circulation Staff—

Jackie Salters, Charles Johnson.

Advisory Staff—

Prof. Ben. E. Goodale, Prof. T. L. Senn, Ronald North (Student Advisor)

THE COVER A Glimpse of Low Country Beauty

Historic Boone Hall Plantation near Charleston is named for Major John Boone, who acquired the property at the end of the Seventeenth Century. The avenue of stately live oaks now draped with Spanish moss was set out in 1843; the plantation home was constructed in modern times which replaced an earlier dwelling. Boone Hall is now owned by Doctor Henry Deas.

IN THIS ISSUE

Down to Earth	Page 1
Agrarian Philosophy	Page 3
Dairyland S. C.	Page 4
The Coastal Plains of S. C.	Page 5
New Clemson Sweet Potato Harvester	Page 6
Healthy Tobacco Plants	Page 7
Future Farmer Training	Page 8
Camellia Culture	Page 9
Between The Furrows	Page 10
Forest Resources in S. C.	Page 14
Soil Mineral Deficiencies	Page 16
Aromatic Tobacco	Page 17
Hints on Marketing Truck Crops	Page 18

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

DOWN TO EARTH

By Joe O'Cain, Associate Editor

TIGER SPUR

Tender shoots
Break the crust
and sheepishly
Emerge in the
New, hazardous existence
of life.
So it is, Country Gentlemen,
When the inevitable bald head
Enters the portals of Tillman.
But then, life has begun.

—Joe W. O'Cain, '54

THE WINNER

"The man who wins is an average
man,
Not built on any particular plan;
Nor blest with any peculiar luck—
Just steady and earnest and full of
pluck.

When asked a question he does not
guess!

He knows and answers "No" or
"Yes."

When set a task the rest can't do
He buckles down and sees it thru.

So he works and waits, 'til one fine
day,

There's a better job with bigger
pay.

And the men who shirked wherever
they could

Are bossed by the men whose work
made good.

For the man who wins is the man
who works,

Who neither labor nor trouble
shirk;

Who uses his hands, his head, his
eyes—

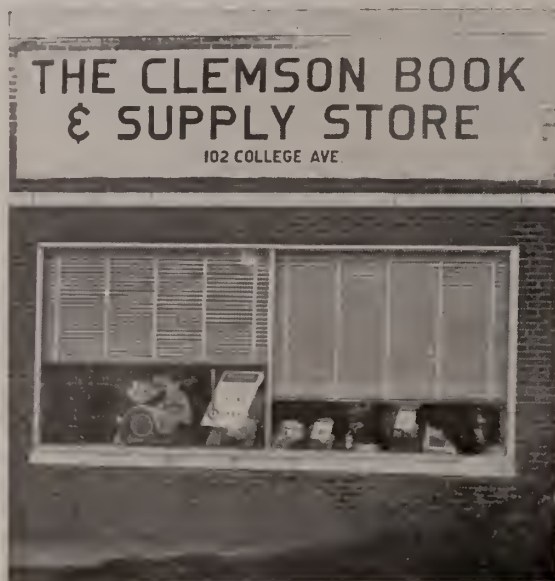
The man who wins is the man who
tries.

—From a poster on the Purina Farm.

PRAYER AT DUSK

Master Peacemaker of the uni-
verse, Farmer and Shepherd of life,
as the vespers sky eddies into the
night, and the busy world is hushed
by the soft hymns of nature, we are
ever mindful of our littleness and of
Thou supremeness. Amen.

—Joe W. O'Cain, '54.



Two familiar old faces always welcome
you back to the campus.

CLEMSON BOOK STORE
Official College Book & Supply Store

L. C. MARTIN DRUG COMPANY
Serving Clemson Men Since 1908

W. B. Camp & Sons, Inc.

BAKERSFIELD, CALIFORNIA
and GAFFNEY, SOUTH CAROLINA

Buckfield Plantation

YEMASSEE,
SOUTH CAROLINA



Agrarian Philosophy

By
THE EDITORS



CLEMSON AGRICULTURAL PROGRESS

By James K. Henderson, Co-Editor

For the first time in years Clemson College is getting a major addition to the School of Agriculture. To analyze the effect this new addition will have on the people of South Carolina and the nation let us look at the four groups of people who will directly feel the effects of this new progressive building plan.

First, let us start with the students of the college itself. To them will be given the opportunity of studying in one of the finest and most modern Schools of Agriculture that the nation has today. With the space and equipment that the new buildings will provide, along with the proper teaching methods, a Clemson graduate should be prepared to face most problems that might arise in his line of study. Graduate students from Clemson and other colleges throughout the United States will also be provided with the research facilities necessary to take full advantage of new processes and developments in their respective fields.

Next, the farmers of South Carolina will be provided with the latest information so necessary to them in producing their products with the highest possible net return. Not that the South Carolina farmer is not now being supplied with all the valuable information the extension service and experiment station have to offer—he is. But with up-to-date laboratories and equipment, research can progress at a much faster and more efficient rate. To the farmers whose sons return to the farm is the knowledge that the finest is being made available to their boys in the way of buildings, equipment and teaching.

The state of South Carolina will benefit by having this wonderful addition to the School of Agriculture at Clemson in several ways. As mentioned before, the farmers will greatly profit from the research and experiments to be carried on here. Thus, the state will benefit by having the products from these farms. There is always a market for superior products and more money can be brought into the state in this manner.

In conjunction with bringing benefits to the state of South Carolina, this new School of Agri-

(Continued on page fourteen)

AGRICULTURE — A RELIGION

By Joe O'Cain, Associate Editor

This science of agriculture is becoming a kind of religion in itself. Today, more than ever before, the agricultural scientist is becoming more and more aware of God's supremeness. It has been said by many contemporary philosophers that the true scientist entertains a stronger belief in God than most other people. I believe that.

Just try explaining the laws of growth, fruitage, or reproduction. All the fundamental processes of life will perhaps never be fully understood. What about the great laws performed with such brilliance of lifting the fluids of the earth into the bud at springtime? Isn't this magnificent existence of life today really a matter of faith? It is beyond human talents to make something as simple as a mere leaf. True, we know all the elements in a leaf, but we lose out when we attempt to manufacture chlorophyll.

The agricultural scientist is a real appreciator of nature; he is God's true partner! He realizes that the things about him, the things that others take for granted, such as the sun, the raining clouds, and the good earth are our most valuable possessions.

The agricultural scientist is no quitter; but he does realize that he can't work against God's established and proven laws such as gravitation, the assurance of spring in April, or necessity of soil for life. It's doubtful that man will ever make peach trees yield apple fruit, or wisteria vines yield cucumbers!

We now realize that every inch of the earth reflects the face of God. The beauty of the visible world and the invisible world about us are marks of supreme intelligence. A minister, Lee Fletcher, has said, "no demonstration is ever verified in a chemical or physical laboratory until it's proven successful." The agricultural chemist has not proven or shall never prove that he is one-hundred percent successful. The elements of the earth, known and unknown, and the very existence of this earth today, in my conviction, flings out the challenge of a greatest honor and glory to the Master Farmer of the universe, God Almighty.

(Continued on page thirteen)

Another Source of Income For the Coastal Plains

By A. L. McCaskill, Jr.
Dairy '54



FERN FAMILY—Five foundation animals of the famous Fern family of Guernseys developed by Mr. C. S. McCall, Appin Farm, Bennettsville, South Carolina

For many years the Coastal Plains of South Carolina have been blessed with two good sources of income, cotton and tobacco. At the present time it is on the verge of adding a third source and that is milk. Dairies, both large and small, are gaining rapidly in numbers throughout the Coastal Plains. Until recently the dairy industry of this section has consisted almost entirely of a few large, specialized dairy farms. The herds on these farms usually contained fifty cows or more. These were mostly producer-distributor operations in which the farmer produced the milk which he processed, bottled, and distributed to the consumer. At the present time many of our large dairy companies, having seen the opportunities in dairying Coastal Plains, have built large modern milk processing plants in the cities of this section. This development has provided farmers with a wholesale market for Grade "A" raw milk. By producing milk for this market the farmer can use many other advantages that result from dairy farming. Some of these are as follows: (1) Helps utilize land not suitable for cotton and tobacco.

(2) Provides an excellent market for feed crops raised on the farm.

(3) Provides more efficient use of labor and machinery.

(4) Provides a twelve month per year income.

(5) Returns many vital minerals and organic matter to the soil.

The Coastal Plains have large areas of land which are not suited for cotton and tobacco. When these areas are limed, fertilized, and seeded to suitable pasture and feed crops the land will produce abundant yields of grass, small grains, corn, and forage. The milk produced from these crops can be sold on the local cash market.

Milk is a finished product; therefore, its market value is superior to that of products which are sold as raw materials and must go through a series of processes before they can be used by the consumer. Each of these processes adds cost to the product which must be paid by the consumer. For example, in 1945, according to the United States Department of Agriculture, the farmer received fifty-nine percent of each dollar the consumer paid for dairy products whereas he received only forty-one percent of each dollar the consumer spent for cereal grain products. Also, another advantage in marketing these crops through milk is the market stability of milk. The market value of these feed crops vary from day to day whereas the market value of milk varies little throughout the year.

Dairy cattle added to the farm program provides more efficient use of labor and machinery. For example, about 120 days of work is re-

quired to grow a cotton crop and tobacco requires only about 120 days for growing and harvesting. Both of these crops are grown at the same time, therefore, the machinery and labor used on farms growing only cotton and tobacco is idle at least one-half of the year. Dairying provides a use for these items throughout the year and yet interfere with the production of these crops very little. The cows are on pasture during the summer months and require very little labor for feeding and management. By breeding the cows to freshen in the fall, they are dry during the summer months when the labor is needed so badly for the cotton and tobacco crops. When labor is used throughout the year the employee and the employer both have higher incomes than they would otherwise.

Milk is produced daily to provide a twelve month year income for the farmer. Milk producers receive a check twice monthly, whereas cotton and tobacco provides for a check only once a year. The milk checks help the farmer meet his expenses throughout the year and often prevents a complete loss during bad crop years.

An advantage in dairy farming, which is often overlooked, is the return of many vital minerals and organic matter to the soil. When crops
(Continued on page twelve)

The Coastal Plains of South Carolina

By Jackie Salters and Ray M. Buck

The low country? Where is it? Who lives there? How do the people earn their living? What is its history?

When our country was being settled, Carolina was a proprietary colony of England, and Charleston was the southern center of culture and commerce. As the colony grew, people of predominantly English origin began to expand the colony, and their place of settlement is known today as the "Low Country."

The majority of the people settled on the rivers and on the more choice land areas near the coast. Great plantations began to develop in these areas and small towns sprang up in the more concentrated areas. Each one of the plantations was independent and self-sustaining. The plantations were self-sustaining in that each could produce or manufacture most of the necessities of life. The few items that could not be produced on the plantations were imported from England or by English merchants. This trade in goods with the mother country also brought the mores and culture of the Anglo-Saxon countries to the low country.

These large plantations demanded much additional labor to produce the rice, tobacco, indigo, and cotton. These four crops comprised the major sources of income during the plantation era and to meet this demand slaves were imported from Africa. The use of slaves for labor and the relation of slaves to family life became an integral part of plantation life in the low country of early South Carolina.



Marginal lands make excellent year round pastures

That was the old low country. Most of the old plantations are gone, and the plantation life has given way to the modern era. Since the War Between the States the scene has changed to one of modern agriculture and diversified farming. The system of agriculture has changed, but the people have changed very little. The people of the low country are well known for their distinct guttural type speech, independence, pride in their community, and their ancestors. The people are not the only factor that differentiate the low country from the remainder of the state. The climate and the soil of the Coastal Plain are distinctly different from the Piedmont.

Roughly, the low country is composed of thirteen counties, extending from Georgetown and Williamsburg counties in the north-east to Clarendon and Orangeburg counties on the west and south to the Geor-

gia line and east to the sea. Some people now consider the entire eastern seaboard to be the low country.

The climate is very pleasant and favorable to agriculture. The average temperature is around 65° F. and the average rainfall is 50 inches as compared to an average temperature of 60° F. and an average of 60 inches in the mountain areas. The low country has a growing season of around 290 days, ranging from April until November. This is compared to an average growing season of 186 days in the north-west portion of the state.

Agriculture in the low country is so diversified that it would take pages to name all the products on the farms in this area. This area embraces practically all phases of livestock production, forest production, fruit, vegetable, and innumerable speciality crop production. Beef

(Continued on page twelve)

New Clemson Sweet Potato Harvester

By David Martin,
Agricultural Engineering '55

Throughout the Coastal Plains region of South Carolina the sweet potato is a very important crop. One of the largest backaches which growers have is harvesting the crop. Only recently the mechanical age has brought little help toward the harvesting of the sweet potato. The sweet potato has a delicate skin that is very easily broken. The flesh also is easily bruised, broken, or cut. A real need has arisen for a good sweet potato harvester!

The first problem in harvesting sweet potatoes is the removal of the vines. The vines form a rank growth and some means must be made for disposing of them. Many different types of cutters have been tried, such as, a plain or shielded cutter and mower-blade knives mounted on a slide. The necessary requirement for clean cutting is that the cutter maintain in all positions a relatively uniform pressure against the top of the bed. A cutter which consists of two mower-blade knives and a spring has been designed at Clemson and has proved to be very satisfactory. The blades are spaced about five inches apart, cutting vines on each side of the bed with a relatively uniform pressure of about 100 pounds regardless of bed height. This cutter will serve as a good vine cutter regardless of what type digger is used.

The actual harvesting of sweet potatoes has always been a time consuming task. Vines often cause trouble by clogging the plow beam; excessive cutting and bruising occurs, and generally the plow leaves a large percent of the potatoes buried so that they must either be scratched out by hand or lost. These are only a few of the problems encountered at harvesting time.

Many growers have experimented with the Irish potato digger but this has proven unsatisfactory for several reasons. Although the Irish potato digger, will show 100 percent of the crop on the surface of the



Rod-type sweet potato digger

(Photo courtesy S. C. Extension Service)

ground, after storage the crop is covered with many bruises, thus giving a bad appearance and a low quality product. In addition, soil and crop conditions in this area are such that this type digger often gives an excessive amount of trouble.

The sweet potato harvester developed at Clemson came about as the result of research on root distribution in 1948. J. K. Park, M. R. Powers, and a staff of capable assistants developed this harvester with most of the testing taking place at the Edisto Station at Blackville, S. C.

This harvester has been developed after much redesigning and testing, and seems to be a practical machine for harvesting sweet potatoes. The actual machine consists of three sets of sifting rods which ride parallel with the surface no matter what depth the plow is set. These rods float behind a special middlebuster made with a wide point and short wings. The plow itself is mounted on a special high clearance frame. The action of the plow throws a fur-

row of soil on the side rods; the rods, in turn, sift the soil and leave the potatoes exposed in view of the pickers. In most fields this harvester exposes about 95 percent of the sweet potatoes with a negligible amount of bruising.

The vine cutter previously mentioned is used in conjunction with this harvester. The cutter is attached under the tractor differential by means of four bolts, and a chain is attached to the frame so that the cutter may be raised at the same time as the plow. Two vine removal disks are attached just behind the cutter and move the vines off the bed just far enough so that the side rods slide over them. These disks also are actuated by springs which maintain uniform pressure against the bed.

In the tests which were conducted at the Edisto Station, exposure averaged over 93 percent, and bruising was no more severe than with standard equipment. In most cases

(Continued on page twelve)

Healthy Tobacco Plants

The Secret of Good Yields

By C. L. Mullwee

The first essential for a good tobacco crop is healthy plants, and in order to produce healthy plants, there must be a good bed carefully selected, well constructed, and properly managed.

The first step toward a good bed is the selection of the correct site. During the early periods of agricultural development in this country, good land was plentiful, and a new area well suited for a tobacco bed could be easily found each year. However, in the present era, due to the fact that good land is rapidly becoming scarce, we are forced to establish a permanent bed on the best soil available. In general, an open, well drained soil, high in organic matter, which does not harden or bake easily, is the most desirable. These soils are usually found in or near wooded areas. Although the ideal soil is seldom to be found, proper soil management may overcome many of the natural soil weaknesses.

The fact that good soils are to be found near wooded areas presents a problem of securing enough sunlight. Maximum sunlight is essential for all portions of the bed if sturdy, disease free plants are to be produced; therefore, any vegetative growth shading portions of the bed must be removed. Generally, a clear area with a slight southern slope will provide maximum sunlight to all portions of the bed during the entire plant producing period.

Perhaps the oldest problem tobacco producers are concerned with is the control of weeds and diseases in the plant bed, and when beds are a permanent establishment, this problem presents itself even more. In early days, weed seeds and disease producing organisms were destroyed by burning the bed. Today, chemical treatment is fast replacing this old practice, even though it is still used in some areas.

The leading commercial chemicals used for seed bed treating are cyan-

amid, uramon, Dowfume W-40, or a mixture of cyanamid and uramon. Cyanamid and uramon are effective against both weeds and diseases, and have some fertilizing value. Dowfume is recommended for plant bed and field use in the control of Root Knot and other nematodes.

A farmer must select and utilize some method of disease and weed control far enough in advance of seeding time to prevent any toxic effects on the tobacco seed. Under normal conditions, ninety days or more are required for the toxic effect of chemicals to disappear.

To apply chemical treatment, first remove any trash and break the soil thoroughly without turning under the top soil. After the soil is well pulverized, disk in about two-thirds of the amount of chemical to be applied with the top three and one-half to four inches of soil. After leveling out the bed with a smoothing harrow or rake, apply the remaining chemical, and again lightly rake the bed to a depth of one inch. Every step in this operation is necessary to insure good results, because to be effective, the chemical must come in contact with the weed seeds or disease organisms.

The most wide spread and devastating seed-bed disease of tobacco is Downy Mildew, commonly called Blue Mold because of its bluish-grey color. It is a wind-borne disease and is particularly favored by cool temperatures and high humidity. This is the reason for insuring that the bed be free of any shaded areas.

Effective control of blue-mold has been achieved with paradichlorobenzene — used as a fumigant — and fermate used as a dust or spray. Treatments may be used as a control at the first sign of the disease in the bed or as a preventative measure when there are any serious outbreaks in the surrounding areas. Other diseases may be prevented to a great extent by insuring that any water applied to the plant bed is free

from contamination, and good drainage has been provided.

Another important factor in producing early, healthy plants is proper fertilization. Fertilizer should be applied far enough in advance so as to be readily available for plant use when needed, and in amounts sufficient to correct the natural existing soil deficiencies. A fertilizer high in nitrogen and low in potash is generally recommended for plant bed use. It is interesting to note that the exact reverse of this requirement is encountered once the plant has been transferred to the field. One of the



Hand picking weeds not controlled by chemicals helps keep beds clean.

(Photo courtesy S. C. Experiment Station)

most important points to remember concerning fertilization is to be sure to avoid the use of Murate of of potash or other chlorine bearing carriers on the plant bed, for such materials are very likely to cause serious chlorine damage to the plants.

The importance of proper care and management of the plant bed can not be over-emphasized, for the best way to increase the net returns from a tobacco crop is to increase the yield of high quality tobacco per acre, and the best way to increase the yield, is to start with healthy plants produced on good beds.

Future Farmer Training

How One Man Influences Citizen Farmers

Gene A. Norris, VAE '54

Mr. Lewis J. Carter, vocational agriculture teacher at Wampee, says that if his endeavors to teach are considered a success he owes it to three factors: having a keen interest in the welfare of a farming community, having a community willing to follow his leadership, and having a willingness to always work. Certainly all who know Mr. Carter have labeled him as a successful agriculture teacher. Let's take a look at his program and accomplishments and see how they resulted from the above factors.

Mr. Carter's keen interest in the welfare of the farmer can be partly attributed to the fact that he was reared on a farm near Loris. His interest in agriculture was stimulated in high school by his agriculture teacher, Mr. R. E. Naugher, who is now Southern Regional Supervisor of Agriculture. With his enthusiasm for better agriculture, Mr. Carter decided to go to Clemson and study Vocational Education. This was during the depression days, and it was necessary for him to go to school a year and teach a year in order to finish. Upon graduation from Clemson in 1935, he accepted the position of agriculture teacher at Turbeville where he remained until 1940. He then moved to Johnsonville where he continued to teach agriculture for two years. With the outbreak of World War II, Mr. Carter joined the Navy where he attained the rank of Lieutenant, junior grade, by the time of his release in 1945. Still eager to work with farm people, the ex-Navy man took a position as agriculture teacher in his own home community, Loris, where he taught until 1951. From that time until the present he has been teaching at Wampee, which is about five miles from the coast.

During his twenty years of teaching, sixteen of which have been agriculture, Mr. Carter has accomplished many things which have been the criteria for classifying him as one of the most successful vocational agri-

culture teachers of South Carolina. One of his first achievements was the establishment of the third cannery in the state at Turbeville. In 1948, his Loris judging team won the State Judging Contest. The team and teacher were awarded a trip to Waterloo, Iowa to represent South Carolina in three judging contests; milk and milk products, poultry and poultry products, and dairy cattle. Mr. Carter's boys exhibited the quality of teaching they had received when they brought home the bronze award. The great convention-city became quite familiar to the coastal plains agriculture teacher as he took two more boys there to receive their American Farmer's degree. An accomplishment which has probably



MR. LEWIS J. CARTER
Wampee Vo-Ag. Teacher

been appreciated more than any other by the surrounding farmers was the installation of a post treating vat at Loris. This year Mr. Carter has received recognition from the South Carolina Association of Soil Conservation for his outstanding performance in teaching principals of soil conservation to evening, all day, and young farmer classes. On January 15, 1954, at a banquet in Colum-

bia, an award of \$50 was presented to his young farmer chapter for the winning of membership contests, percentage increase, and actual number increase. Perhaps two big factors instrumental in achieving these accomplishments have been that Mr. Carter has actually managed a farm while teaching and therefore sees the needs of the farmer, and he has striven to improve his technical knowledge and teaching ability by attending summer schools and short courses. He now needs only two credits to complete requirements for his master's degree.

One has only to look at Mr. Carter's present program to understand why he has been chosen as one of the outstanding agriculture teachers in the state.

His instruction groups consist of all day classes, young farmers, and evening or adult classes. His all day classes consist of 32 farm boys, divided into three groups. Instruction for these boys consists of classroom work and outside or field study. The inside instruction consists of lectures, discussions, studying books and bulletins, movies and other visual aids. The primary crop studied in class is tobacco since it is the major money crop of that section. Running close for second place are sweet potatoes and corn. The production of marketing timber receives a great deal of attention. With livestock instruction, the production of hogs rank first. Beef and chicken production are studied, but they are not as important around Wampee as pork production.

Mr. Carter finds his outside program holds both practical value and interest for the boys. The boys must actually learn by doing such tasks as dehorning, castrating, vaccinating, identifying plant diseases, running soil tests and criticizing farm layouts. Of course adequate instructions are received before these tasks are attempted.

(Continued on page thirteen)

Camellia Culture

W. D. Barton '54

The camellia is one of the most popular of all ornamental plants grown in the south today. It is, therefore, important that culture and care of these plants be understood.

The soil in which the camellias are grown should be well enriched to give the plant a good supply of nutrients. Good results will be obtained from a soil made up of one part of each of good garden soil, peat or leaf-mold, sand, and well decayed manure. It is a good thing to always keep the organic matter content of the soil at a high level. Peat, leaf-mold, and manure are good sources of organic matter, while sand will help with drainage and aeration.

A mulch on the soil surface is very helpful in maintaining favorable moisture conditions in the surface soil where camellia roots should be extensive. Peat moss is good but costly. Cheap and excellent for the purpose are wood shavings, such as pine.

The proper pH for camellias is 6.5 to 7.5. This pH may be maintained by keeping the plants mulched properly at all times.

Weather conditions play an important part in the culture of camellias. Hot, dry, motionless air is not conducive to good camellia culture. For winter nights optimum temperatures should be maintained at 40° to 45°F. It is not desirable for the temperature to go higher than 55° or 60°F. in the warmer daylight hours. Occasional rises above this point, however, will cause no injury, but changes should not be abrupt because flower buds may drop. Movement of air should be free at all times. Moist air is preferable. Best results are obtained if the humidity does not drop below 60°F.

Careful attention should be given to watering. Plants should not be allowed to dry out. It is best that

the moisture content of the soil vary very little. Moisture in the soil must be maintained at a high level. A safeguard against over-watering is good drainage. To insure good drainage do not plant camellias in heavy clay soils. If the soil is a little clayey, it may be advisable to place one inch of gravel in the bottom of the hole when planting them.

Shade, also, plays an important role in the culture of camellias. During the summer months the flower buds enlarge and develop in preparation for opening in autumn and winter. High temperatures seem to be helpful in the growth and development of flower buds. It should, however, be kept in mind that in hot dry weather special attention should be given to watering.

Fertility should be maintained at a high level. Commercial camellia fertilizer can be scattered very lightly over the surface and watered into the soil. A liquid fertilizer is also good. An application of one ounce of liquid fertilizer to two gallons of water is recommended every two weeks.

Scale insects sometimes gain a foothold on camellias. The best time to take care of these is just after spring growth has become hardened. White miscible or summer oil are materials most commonly used. In the spring this can be used at the rate of one to one hundred parts of water. In autumn it can be used at one to 60 parts of water. The insecticide may either be sprayed on the plants in such a way as to hit the insects or if the plants are small, they may be washed with it. Spider mites also attack camellias, turning the leaves greenish-gray. They may be controlled by using a commercial miticide.

Pruning is a necessary part of the culture of camellias. Many garden-

ers place too little importance on pruning, probably through fear of losing the following year's bloom. The inner branches should be thinned, dead branches close to the trunk should be removed and the outer branches should be trimmed to the shape of the plant. This will have little effect on the bloom, as the inner branches seldom produce large flowers but will produce sturdy new growth. They may be pruned at any time of the year, but if heavier pruning is done right after the blooming period before new growth starts, it will have little effect on the following season's blossoms.

For growers wishing larger blooms for show or arrangement purposes, disbudding is recommended. The practice is to remove all but one or two terminal buds and the majority of the lateral buds on each branch. This is not essential, however, if the gardener is interested in profuse bloom rather than size.

* * * *

The Clemson Agricultural Engineering Department has been operating under a joint administrative setup since June, 1952, when the board of trustees approved a joint program of administration which was sent to the president by the deans of the schools of engineering and agriculture and the head of the Agricultural engineering department. Although this system is a rather unique setup here at Clemson, it is by no means unusual for agricultural engineering schools throughout the country, with Clemson's department being the 22nd in the U. S.

* * * * *



BETWEEN

Sowed by

AGRONOMY CLUB NEWS

Douglas Owens, Ted Maxwell, and Robert Poston, members of the Clemson Agronomy Club, attended the annual convention of the student activities section of the American Society of Agronomy in Dallas, Texas, November 16-20. Each year the student section holds its meetings in concurrence with the parent society. Over twenty different schools were represented from all parts of the country.

Besides having many guest speakers to talk to the student section, the student delegates were invited to attend as many of the parent society meetings as possible.

One of the highlights of the convention was a field trip to Fort Worth to visit the stockyards and Armour Packing Plant, where the group had a delicious steak dinner.

The delegates from the Clemson Club agreed that the convention was a success in every respect. It afforded the opportunity to meet many of the outstanding leaders in agronomy and to exchange ideas with students from other schools.

During the previous year, the Clemson Club was chairman of the National Crops Judging Contest Committee. The delegates gave a report of this committee at the convention.

On October 29 and 30, 1953, the College Feed Survey Committee sponsored by the American Feed Manufacturers' Association of which Professor J. P. LaMaster is a member, met in Chicago. This Committee meets at the beginning of each feed year to make estimates of feed used by various classes of livestock and poultry. These estimates are compared with available feed supplies to arrive at a supply-use balance. In their calculations, the Committee estimates what producers will likely do in view of current feed and probable economic conditions. In no way does this report reflect what the producers should do.

After completing work for his master's degree last June at the University of Michigan with high honors,

Dave McGregor is now employed as a forest geneticist with the United States Forest Service Branch of Research at Lake City, Florida.

For the past twelve years, reports of the College Feed Survey Committee have been published. These reports have served as a helpful guide to educational and service agencies and to the Nation's producers of meat, milk, and eggs. Annually, estimates have turned out to be remarkably accurate.

The Borden Foundation Scholarship of \$300.00 was awarded this year to Bernard M. Sanders, Jr., of Orangeburg, S. C. This scholarship is awarded to the eligible senior achieving the highest average grade on all college work preceding the senior year. The recipient of this award must have included in his curriculum two or more dairy subjects.

Professor J. P. LaMaster of the Dairy Department attended a large Cuban cattle exhibition in Sancti-Spiritus, Cuba, from November 28 through December 8, 1953.

W. A. Smithwick, dairy graduate in 1949, is now a jet pilot stationed at Victoria Air Base, Victoria, Calif.

C. A. James, III graduate of 1943 in dairying, is a captain in the regular army quartermaster corp and is stationed in Japan.

H. A. Johnson, 1940 graduate in dairying, is the quality control technician for the Pet Dairy Products Co. in Greenville, S. C.

Dr. C. R. Swearingon, dairy graduate of 1937, is now a practicing veterinarian in Smithfield, N. C.

T. P. McKellar, dairy graduate of 1933, is now the owner of the Maple Grove Dairy in Ashboro, N. C.

James E. Cushman, a 1950 graduate in dairying, is director of S. C. Dairy Commission with headquar-

ters in Columbia, S. C. James is also a former co-editor of *Agrarian*.

W. T. O'Dell, 1950 dairy graduate, is working on his Ph.D. at Penn. State College. Probably most of you know him as the professor of Dairying.

William Reasonover, the first *Agrarian* editor after World War II, is now advertising manager for "The Robersonian" newspaper at Lumberton, N. C.

James H. Boulware, a 1932 dairy graduate, is now agriculture attache at Rangoon, Burma.

Radio Station WIS in Columbia has an agricultural program at 12:45 p.m. each day. It is called "The Clemson Journal" and is rotated each day between the different agricultural departments.

The Claude W. Kress Research Endowment Fund has awarded a research grant to Dr. J. M. Rush, Associate Professor of Bacteriology, for a study of the family achromobacteraceae. The object of this research project is to isolate members of the genera of the family achromobacteraceae from sources suggested in the literature and to determine their significant taxonomic characteristics which will facilitate their future identification.

J. M. Dunlap, class of 1923 in dairy, is now the owner of a milk and ice cream plant in Cleveland, Tennessee.

T. W. Bailey, dairy graduate in 1926, is assistant director of the Textile Institute at Charlotte, Va.

J. B. Copeland began December 15 his new duties as assistant agricultural editor of the Clemson School of Agriculture.

Mr. Copeland grew up on a farm in Carroll county, Georgia. He graduated from the University of Georgia in 1948 with a B.S. degree major in dairying. While at the University, he served as editor of the "Georgia

FURROWS

Editor



Agriculturist" and "**Georgia Dairyman**," student publications, and was a leader in other student activities. Since graduation he has served as fieldman for the Pet Dairy Products Company in the northeast area of Georgia with headquarters at Royston, Georgia.

As a member of the Publications Staff of the School of Agriculture, Mr. Copeland will devote his time primarily to publication and information work in connection with agricultural research. S. C. Stribling is the agricultural editor.

AGRICULTURAL ECONOMICS DEPARTMENT

H. D. and M. J. Morgan, brothers in the class of 1950, are employed in the sales department of the Lederle Laboratories, large manufacturers of agricultural and medicinal supplies, including some of the recently developed anti-biotics.

C. E. Pike, Ag. Ec. '38, is Agricultural Attache of the American Embassy in New Delhi, India. Pike is a native of Clemson.

O. Harold Folk, agricultural economics graduate in the class of 1937, is on the staff of the International Bank for Reconstruction and Development in Washington, D. C.

J. M. Bozard, Ag. Ec. '48, is employed as agricultural and livestock agent for the Atlantic Coast Line Railroad with headquarters in Orlando, Florida.

H. Z. Smith, Ag. Ec. '47, is vice president, in charge of sales, for the Sedbery Corporation, the largest manufacturers of grinding machinery in the U.S.A.

C. C. Taylor, Ag. Ec. '50, is Agricultural Economist for the United States Department of Agriculture with headquarters at Clemson.

* * * * *

Carl Dalton, a former forestry student, is continuing his studies toward a bachelor degree in forestry at the university of Michigan.

* * * * *

Hormone is now being used in experimental work to thin peach trees. After studying the results, there is hope that a hormone concentration

will be found that is suitable enough to put on the market.

* * * * *

The 1953 agricultural yearbook is now available to the public. It is entitled "**Plant Diseases**." You may obtain a copy by writing to the **Superintendents of Document, Washington 25, D. C.** Price:\$2.50. You may obtain a copy from your senator or representative free or charge.

* * * * *

Mr. J. M. Eleazer, extension information specialist, reports that you may now obtain good certified Coastal Bermuda grass in every county in the state. There was a lot of it grown in every county this past winter under the supervision of Hugh Woodle, agronomy extension worker, and the respective county agents. Coastal Bermuda does well on light soils, and also responds well to nitrogen.

* * * * *

Dr. James G. Gee, graduate of soils in 1917, is president of Eastern State Teachers College in Commerce, Texas. Dr. Gee was at one time director of athletics here at Clemson. Dr. Gee received his Ph.D. degree from Cornell university.

* * * * *

TWO NEW WHEAT VARIETIES

Two new wheat varieties, the Anderson and Taylor, recently released, have shown high yield of performance and a wide range of adaptation. This fact is confirmed by results of tests conducted in this state and in nine other southern states. The program represents cooperative work that has been in progress for a number of years by these ten southern state experiment stations; the Bureau Plant Industry, Soils and Agricultural Engineering; and Coker's Pedigreed Seed Company, Hartsville, South Carolina. Additional information concerning these two new wheat varieties may be obtained by writing for Circular 92 and address to the Bulletin Room, Clemson College. The circular is written by W. R. Paden, Acting Head of the Agronomy Department, and E. B. Eskew, Associate Agronomist.

* * * * *

At the annual meeting of the National Joint Committee of Fertilizer

Application in Chicago, December 8, Professor G. B. Nutt was elected general chairman for 1954.

* * * * *

The mechanical sweet potato digger which was developed at Clemson by Mr. J. K. Park, of the Clemson Agricultural Engineering Department, and Mr. M. R. Powers, formerly at the Edisto Experiment Station, is now being manufactured by the Darf Corporation of Raleigh, North Carolina.

* * * * *

In the spring of 1953, application was made through Dean J. H. Sams of School of Engineering to the Engineering Council for Profession Development for the accreditation of the Clemson Agricultural Engineering curriculum. In October, President Poole and Dean Sams were notified that the curriculum had been fully accredited. In addition to the recognition and prestige given to the department, it will mean much to the graduate of the department who wishes to obtain engineering license, do graduate work, or seek employment with firms who recognize the standing of E. C. P. D.

* * * * *

For the year beginning October 1, 1953, Dr. J. H. Sams, Dean of School of Engineering, and Professor G. B. Nutt, Head of the Agricultural Engineering Department, will serve on a regional committee to evaluate undergraduate Agricultural Engineering curriculum for the states of Alabama, Florida, Kentucky, Georgia, Mississippi, North Carolina, South Carolina, Tennessee and Virginia for accreditation.

* * * * *

The Ralston Purina Company of St. Louis, Missouri, gave a dinner to 27 agricultural engineering seniors at the Clemson House Wednesday night, December 9, and afterwards interviewed all who were interested in plant management positions with the company. Several men are expected to join this organization. W. H. Mitchel, agricultural engineering graduate of 1953, is working for the Charlotte branch of the Purina Company.

THE COASTAL PLAINS OF SOUTH CAROLINA

(Continued from page five)

cattle and hogs constitute the majority of the livestock production. There are numerous herds of purebred cattle as well as large numbers of grade animals. Cattle and hogs are raised on the smallest farms and the largest plantations. In recent years large acreages of low and marginal lands have been utilized for pasture. There still remain large areas of this land that are not producing now, but with the advent of more and better equipment and increased technical knowledge this land is being rapidly brought into profitable production.

The low country is one of the largest milk producing areas in the state. The Bamberg-Orangeburg-Eutawville triangle is one of South Carolina's largest major milk-sheds. Purebred dairy animals play an important part in maintaining a high rate of production. Gippy Plantation pioneered in purebred dairy cattle in the low country with their herd of Guernseys.

The low country is not a commercial fruit raising area; however the fringe is a large pecan growing section. What is lacking in fruit is made up in flower growing. The large azalea and camellia gardens and nurseries are world famous.

Truck crops are grown extensively along the coastal strip. This area produces string beans, watermelons, cantaloupes, cucumbers, cabbage, lettuce, potatoes, and numerous other crops on a smaller scale. The soil and climate are very favorable to this type of agriculture. The mild temperature and long growing season permit year-round production of some crops.

Grain and other feed crops are grown extensively throughout the Coastal Plain. Corn, small grains, soybeans, cowpeas, hay and grazing crops are produced to feed the hogs, cattle, and other livestock.

Not only can the low country produce crops and livestock; but it is also rich in natural resources, especially forests. The great pine forests of the low country make it the largest pulp and pine timber area in the state. More and more land that was once thought useless is being planted in pines to further increase the pulp and timber industry.



String beans are one of the numerous truck crops grown extensively in this area.

From this brief summary of the low country you can see that it is an interesting and varied section of the states, both in industry and agriculture. Opportunities in nearly every field are opening as the area grows out of its rich past into a richer future.

SWEET POTATO HARVESTER

(Continued from page six)

"scratching" is not necessary. Elimination of "scratching" enables pickers to harvest a considerably larger number of bushels per day and makes the entire job much less disagreeable.

Use of this harvester requires that the field be dug in alternate rows. Design of the side rods is such that performance is equally good in digging first and second rows.

This harvester was put into commercial production in 1952, and several dozen were sold on an exploratory basis. It is now available for use on the Ford and Ferguson tractors and could be adapted to other tractors. The harvester is being produced by the Darf Corporation of Raleigh, N. C. About sixty have already been put into use, and the reactions of growers have been quite favorable. The harvester has been patented, and the cost of it is between two and three hundred dollars.

Research is still being carried on concerning root distribution, transplanting, and harvesting. For additional information check Bulletin 40, "Machinery for Growing and Har-

vesting Sweet Potatoes," by Joseph K. Park, M. R. Powers, and O. B. Garrison.

DAIRYLAND, S. C.

(Continued from page four)

are grown and sold as such, all of the minerals present in them are sold, but by marketing a crop through dairy cattle many of the minerals are returned to the soil through manure. In addition to returning minerals, organic matter is returned in large quantities. The value of manure is often overlooked but at Clemson College, by applying manure on Bermuda grass pasture, a return of \$3.35 per ton was realized in increased feed value. This was calculated in terms of alfalfa hay replacement value of the pasture.

Few people realize the amount and value of manure which is excreted by dairy animals in one year. A study at the Minnesota Experiment Station reveals the following information. A 1000-pound dairy cow excretes 26,000 pounds of manure a year in the liquid and semi-solid state. This amount of manure would contain approximately 127 pounds of nitrogen, 40 pounds of phosphoric acid, and 125 pounds of potash. The value of these plant nutrients at the present time would amount to approximately thirty dollars disregarding the value of the organic matter.

The addition of dairy farming will result in fewer unused acres of land, more income for the farm laborer and the farmer, a steadier income, and a richer soil. These factors will help build a more prosperous Coastal Plains and South Carolina.

FUTURE FARMER TRAINING

(Continued from page eight)

Another part of Mr. Carter's all-day program is the farm shop work. Here the boys construct farm equipment to improve their livestock programs, and make repairs on farm equipment.

In any all-day class group, the F.F.A is a must. Mr. Carter's chapter is quite active and a real asset to the community. Along with the usual F.F.A. activities such as judging, public speaking and exhibiting at fairs, these boys also maintain a school forestry plot and a garden plot. In order to raise money, the members also raise hogs, which are fed from the lunch room garbage and corn raised in the garden plot. The sale of sweet potatoes, tomato plants and potato slips also adds to the income of the chapter.

About 67 young men, all of whom are not established in farming, compose the second instructional group, the Young Farmers. This group has regular monthly meetings plus six to eight called meetings during the year. Mr. Carter gives instruction on problems which they bring up; he also secures agricultural specialists to speak at meetings.

The third formal instructional group under Mr. Carter's supervision is the evening class, or adult farmers. This group includes 50 well established farmers who meet a minimum of ten nights a year. At these meetings the farmers bring up their various problems for group discussion with Mr. Carter acting as discussion leader.

Last summer Mr. Carter along with nine other agriculture teachers in the state took a course at Clemson which prepared them to become supervisory teachers for students in the directed teaching program. In this program, which will begin the spring semester of 1954, a number of student teachers will actually live and teach in the ten school communities for six weeks.

With these instructional groups, plus the supervision of the community cannery and shop, Mr. Carter has still found time for other activities in the community. He is a member of the American Legion, the Masons, and president of the Lions Club. For a number of years he has taught a Sunday School class and recently he was elected superintendent of the

Irrigation

AS

Crop Protection

Domestic Water Systems

Disston Saw-log

AND

Pulpwood Chain Saws

COLUMBIA SUPPLY CO.

Phones LD-64

Local 5121

COLUMBIA, SOUTH CAROLINA

"One of the best in the South. . . ultra-modern. . .", says



Clemson
House



In the foothills of the beautiful Blue Ridge Mountains, you'll find the Clemson House located in a unique setting - right on the campus of Clemson College. Here you will find all of the services of a great metropolitan hotel yet you will be far away from the noise of a large city. And you'll enjoy the beautifully landscaped grounds and the flower beds. The splendid accommodations and the excellent cuisine offered at the Clemson House are combined with warm friendly hospitality and fine service. The Clemson House is a gem among fine hotels and the rates are almost unbelievably low. All public rooms are air conditioned. Four dining rooms and the Tiger Lounge and Coffee Shop. There is swimming, fishing and golf nearby.

Fred L. Zink, Jr., Manager

On East Edge of Clemson, S. C. On U.S. 78, 123 & State 28

Sunday School. Probably the most important role of all to Mr. Carter is that he is the husband of a charming wife and the father of two lovely children.

Mr. Carter, the vocational agricultural field recognizes you as one of its outstanding teachers. May your achievements in your profession and in life be a goal for others.

AGRICULTURE—A RELIGION

(Continued from page three)

Certainly the agricultural scientist does not challenge God. He works with God and for a better humanity. We have realized as Herbert Spencer states it that "we are ever in the presence of an infinite and eternal Energy from which all things proceed."

Pendleton Fertilizer
Issaqueena Feed
Cottonseed Products
Certified Cottonseed
Insecticides

PENDLETON OIL MILL
PENDLETON, SOUTH CAROLINA

Compare - - -

PET HOMOGENIZED MILK



AND

PET ICE CREAM

with any other

CLEMSON AGRICULTURAL PROGRAM

(Continued from page three)

culture at Clemson will bring benefits to other states in the nation. These products will be available to neighboring states and others interested. Students from other states will have all the advantages mentioned for South Carolina students. Many of the people in the Experi-

ment Station and the Extension Service are also connected with the United States Department of Agriculture, and thus information gained here is made available to farmers all over the nation.

Last but not least, the distinction of having this fine new School of Agriculture will mean much to Clemson College, the state of South Carolina, and the nation as a whole.

FOREST RESOURCES IN SOUTH CAROLINA

JACK B. EDWARDS, Pre-Forestry

The forests of South Carolina are one of the State's most important natural resources. They form an inseparable part of the economical and social structure of the State. If proper care is used in the management program, the forest resource is renewable, and because of its vital contribution to the welfare of the people, both private and public officials should take a more active part in initiating and putting into effect conservative and productive plans of forest use.

Approximately 55 percent, or eleven million acres of nineteen and one-half million acres of South Carolina is in woodland. The eleven million acres are owned by over one hundred and eight thousand individuals and firms. These vast forests are the sum total mainly of small woodlands of twenty, forty, and one hundred acres. Only one hundred and forty owners have title to more than five thousand acres. Much of this forest area has progressed through several cycles of clearing, cultivation, and abandonment. There are approximately thirty billion board feet of saw timber in the state, about three-fifths pine and two-fifths hardwood and cypress. More than a third of the total volume is loblolly pine. Despite this large volume, the saw timber production of South Carolina decreased ten percent during the period 1936 to 1947. This decrease was worse in some parts of the State than in others. The decrease was especially severe in the southern coastal plains. Here there was one-fourth less volume in 1947 than in 1936—seveny-five saw tree where one hundred had been growing in the earlier survey.

While the saw timber volume has been declining at a serious rate, the quality of saw timber has likewise declined. One tree in every five is rated as a cull tree today. These are the trees that are too poorly formed, too many limbs, too rotten, or too defective to have commercial value.

(Continued on next page)

FOREST RESOURCES

(Continued from page fourteen)

It is a matter of considerable concern that hardwoods of low quality and cull hardwood trees are replacing pine on areas that could grow good pines. When an area is cut over, the best stands and the best trees are usually taken, and the inferior trees are left. As a result, culls and low-grade hardwoods remain with each succeeding cutting. The cull tree volume, which was only eleven percent of the total in 1936, has increased to eighteen percent of the total volume in 1947. Practically all of this volume is in hardwoods.

In addition to the timber production, South Carolina also participates in large scale forest industries. These industries, of which lumber is the principal product, are found in every county of the state. Pulp and paper manufacture ranks next to lumber in the value of products. Expansion of mills has increased the requirement of pine pulpwood to over a million cords per year.

The wood-using industries, as a group, rank next to textiles among manufacturing industries of South Carolina. These wood-using industries in 1940 provided a total employment of over eight million man-days, equivalent to full-time work by 31,600 persons. The number of persons benefiting from forest and mill employment is much larger, because of the many part-time workers. Farmers furnish much of this part-time labor. The state-wide distribution of farm forests—more than one-half of the total—is an important employment factor. Each year, the forests of South Carolina add an income of \$172,000,000 to these citizens of the state.

Forests are as necessary to the maintenance of the farm, the state, and the nation, as money in the bank. The spirit of forest conservation, lying dormant in the minds of so many people, must be brought to life. It must be made to express itself in better timber management, in planting trees on deserted and idle land, and in the many phases of forestry that can be applied to woodlands to insure a continuous supply of wood products.

LANEY BROTHERS, INC.

BISHOPVILLE, S. C.

"YOUR FRIENDLY FARMALL DEALER"

SEE US FOR YOUR FARMING NEEDS

WE HANDLE A COMPLETE LINE OF
INTERNATIONAL HARVESTER FARM
EQUIPMENT

ETIWAN FERTILIZER COMPANY

CHARLESTON, SOUTH CAROLINA

INDEPENDENT — PROMPT — RELIABLE

Manufactures Of
DEPENDABLE FERTILIZERS SINCE 1868

CONTINENTAL GRAIN CO.

ANDERSON & EASLEY, S. C.

Buyers of All Farm Grains

Manufacturers of

Arrow and Sunny South Feeds

for

LIVESTOCK and POULTRY

BIG OAK RANCH

BRAHMA — HEREFORD — ANGUS

CROSSES

and

Registered BRAHMAS and HEREFORDS

Mt. Pleasant, S. C.

Ray. M. Buck, Owner

SOIL MINERAL DEFICIENCIES

How Do They Affect Cattle?

By TOMMY ELEAZER

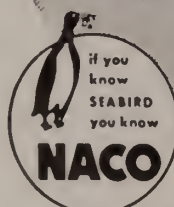
It is needless to say that a man raising cattle wants to produce good healthy animals. Livestock raised in the bluegrass region of Kentucky and Tennessee, and in the Shenandoah Valley of Virginia are world famous for their excellence. You may ask why is this true only in these certain areas of our vast country. It is true because the soil contains plenty of all the soil nutrients that are essential to the welfare of good healthy cattle. In other regions cattle can only thrive to the degree to which the elements of the soil have supplied to the grains and forages utilized as feed the elements needed. This is by no means a new idea, but has been shown by centuries of past experience.

Many cattle growers who think they are supplying their animals with everything they need in the way of food are actually starving them by a lack of essential minerals. Let us take, for example, the phosphorus deficiency in the United States. Around 25 years ago this deficiency showed up in farm cattle in Wisconsin and Minnesota. The symptoms were stiffness of joints, harshness of coat, dull eyes, a general unthrifty condition, and an abnormal appetite which resulted in bone chewing. As soon as this situation was checked by supplying the animals with a phosphorus supplement, or hay grown on better soil, an almost immediate recovery of severely affected animals occurred. This case stimulated much research in other areas. In Minnesota alone, the soil in 60 counties was found to be deficient in phosphorus.

The use of mineral supplements where they are needed now takes care of cattle which are fed a grain ration in addition to their hay and pasture grazing. But this is not true for animals which are raised largely on forage crops and pasture alone. These animals may not be receiving an adequate mineral supply. The best way of correcting this deficiency is by supplying the deficient soil with the minerals it needs. This building up of the soil aids not only in correcting the deficiency, but also in increasing feed production.

(Continued on page twenty)

What it takes
NACO's



NACO

FERTILIZERS

that build
better crops

INSECTICIDES

that assure
crop protection

FERTILIZER COMPANY
(ADDRESS)

Aromatic Tobacco Can You Grow It?

By Edward M. Rast
Agronomy '54

Aromatic tobacco, commonly referred to as Turkish tobacco, has been blended with domestically grown tobacco for more than 30 years; resulting in the popular blended cigarettes which are familiar to the American public. At present, the manufacturers of these blended cigarettes have need for more than eighty million pounds of aromatic tobacco annually.

Experiments carried on by the experiment stations of different southeastern states have shown that aromatic tobacco, of equal quality and value of those which have been imported, can be grown in many of our Piedmont and mountain soils of South Carolina, Virginia, North Carolina, and Georgia.

With the new devices developed for labor saving in harvesting, and new methods for curing operations, several people can now take care of

one acre of aromatic tobacco at a labor income of \$1.28 per hour as compared to 52.7 cents per hour. Since there are not many crops that will give a labor income of \$1.28 per hour, this crop is worth investigating.

The production of these tobaccos will not only provide a cash income for the farmer, but it will also fit well into the crop rotations. The addition of this crop to the farm provides an additional use for farm labor at just the right time of the season. Since the better qualities of aromatic tobacco are produced on relatively poor soils the use of only 400-500 pounds of commercial fertilizers per acre is needed in the production of this crop.

The most suitable soils in the production of these tobaccos are those soils that are heavy with a clay base. The better soil types used in growing this crop include the Cecil,

Appling, Madison and Porter series. When selecting soil for the production of this crop, usually the most suitable areas are those that are well drained, found near the crest or slope of hills.

For farmers who are interested in producing aromatic tobacco, Bulletin 111, **Aromatic Tobacco — Instruction for its Production in South Carolina**, has been written by J. R. Mattison, Extension Tobacco Specialist, J. A. Martin, S. C. Experiment Station and T. L. Senn, Associate Professor of Horticulture, and published by the Extension Service of Clemson College. This bulletin gives recommendations based on farm experience and research that will give practical help to farmers who plan to produce this tobacco. This bulletin can be secured free of charge through your county agent, or by writing to the Bulletin Room, College Library, Clemson, S. C.

SPRING TIME IS AROMATIC TOBACCO PLANTING TIME

Plant Aromatic Tobacco to Boost Income, Utilize that Extra Land and Equipment, Buildings, and Labor.

Many Farmers in the Piedmont Section of South Carolina, North Carolina, Georgia, Tennessee, and Virginia Have Found "Pay Dirt" in the Production of Aromatic Tobacco for Which Southeastern Aromatic Tobacco Company Affords a Ready Market The Clemson Agricultural College has Developed and Will Continue to Develop Better and More Efficient Ways and Means in the Various Phases of Aromatic Production.

**IF INTERESTED IN GROWING AROMATIC TOBACCO, CONTACT
YOUR COUNTY AGENT**

SOUTHEASTERN AROMATIC TOBACCO COMPANY
1628 East River Extension
ANDERSON, SOUTH CAROLINA

Hints on Marketing Truck Crops

William E. Byrd
Ag. Ec. '54

In the southeastern part of South Carolina, much human effort along with much land resources, capital, and equipment is devoted to raising truck crops; some for sale in the towns and cities of South Carolina, and others to be shipped primarily to northeastern markets.

It has been found that when dealing with a product which is being shipped a long distance, it usually pays to ship only the better grades. Some of the major reasons are as follows:

(1)—The cost of transportation is a constant, regardless of the quality of the commodity. In other words, it will cost the same to ship a truck of lower grade watermelons or peaches as it will to ship a truck of higher grade products.

(2)—Usually quality during transportation and storage may be better maintained on high grade than on low grade products.

(3)—Consumers who buy the high-grade product are, generally speaking, not too concerned with the price of the commodity and are willing to pay premium prices in order to obtain high quality products.

Many individual growers do not ship north in their own trucks but sell to trucker buyers. The trucker buyers consist of two groups; the trucker who works independently, and the trucker who is employed to buy for some company.

Truck crop producers are sometimes faced with the problem of how to dispose of surpluses, especially those of the inferior grades. One solution is to offer some of the better low grades on the local markets at a reduced price. You can afford to sell for less locally since you do not have the high transportation cost to worry about. Another solution is to sell the lower grades in other forms. In the case of tomatoes, they may be processed and sold as tomato juice or perhaps canned tomatoes. In the case of string beans and other vegetables, they may be canned.

One of the most important considerations in selling commodities lies in grading. Some of the more important reasons are:

(1)—The consumer wishes to know what he is buying without visual inspection.

(2)—The merchant buying produce by telephone or by letter likes to know exactly the type of goods he is getting to offer his customers.

(3)—Usually the producer will be well paid for his efforts taken. For example, two bushels made up of a

mixture of No. 1 and No. 2 grades will usually not bring as much as a case of the No. 1 grade and of the No. 2 grade.

It is most important to producers to keep well informed of the current market situation in reference to the various markets so that they will better know both where to ship and when to ship.

SEE US FOR YOUR FARM SUPPLIES

WE CAN HELP YOU

WE HANDLE A COMPLETE LINE OF

SEEDS, FEEDS, FERTILIZERS, AND
GENERAL SUPPLIES

BASKIN FARM SUPPLY

BISHOPVILLE, S. C.

An Authorized Purina Dealer

WHY THE STOCK NEEDS MORE SILOS

Silage is succulent feed—the nearest thing to good pasture. It is relished by all livestock. Leading dairy records have been made by silage-fed cows. Prize-winning beef cattle are fed silage.

Southeastern Silo Company

640 Sixth Street

Phone 2-8378

AUGUSTA, GEORGIA



When a man hangs out his Shingle...

Thousands of them started that way . . . with a hole in the wall and a slab of cedar, hung over the canopied boardwalk.

They were men of every sort, in businesses of every sort. And most of them had some things in common, like vision, initiative, and faith in the future.

But each that lasted had still an extra quality in common with the other—an acute consciousness of the responsibilities he assumed when he went into business.

He knew that the day he “hung out his shingle” he did more than announce a new venture—he announced his willingness to plight his future

with his community and with his neighbors . . . to live with them, to work with them, and to serve them.

Now the signs have changed some. But though neon has supplanted the cedar slab and the modern store front has replaced the canopied boardwalk, the philosophy of the successful remains the same.

It’s the philosophy that admits to the responsibilities assumed when a man “hangs out his shingle”—the responsibilities to his neighbors, to his community, and to his country.

It’s the philosophy to which the John Deere dealer subscribes.

J O H N D E E R E

Moline



Illinois

Your Trade Marks for Quality Seed



Producers
and
Distributors of
**SOUTHERN
FIELD
SEED**



Exclusive Producers of
TABLE JOY Hybrid Sweet Corn

"All McNair's Seed Are Grown on McNair's Farms"

McNAIR'S YIELD-TESTED SEED CO.

LAURINBURG, N. C.

Phone 388 or 502

SOIL MINERAL DEFICIENCIES

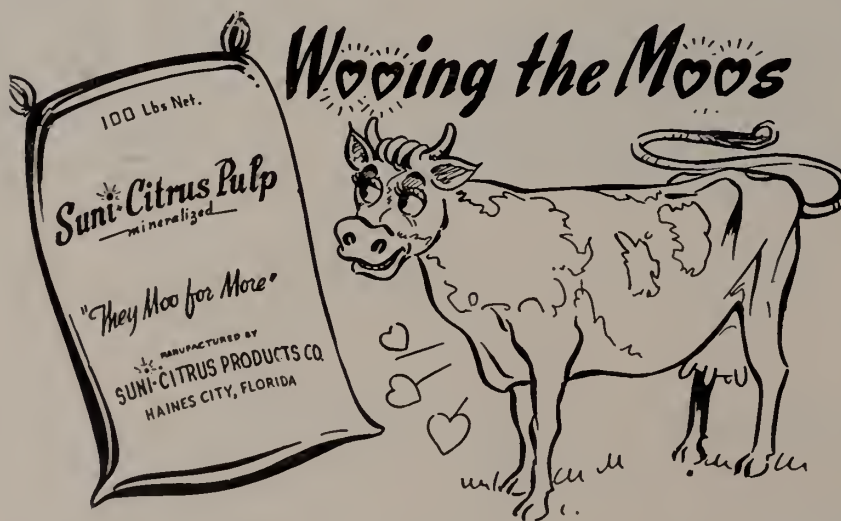
(Continued from page sixteen)

Now nearly every state conducted research on the need of minerals for various classes of livestock. The area where phosphorus deficiencies occur is known to include the Northern Great Plains, the Gulf Coast, a part of the Atlantic Coast, the middle South, and the extreme Southwest. This shows that the problem of soil deficiencies is widespread throughout our country. It has been shown that where there is a deficient soil, there are deficient cattle. Our cattlemen must face this problem.

There are several ways of tackling this problem. One way is by applying the needed mineral fertilizer to pastures. Fertilizer will increase the nutritive value of pasture grass, and the grass will in turn help supply the cattle grazing on it with the needed minerals. In order to have good healthy cattle we must have a good healthy soil.

It has been shown by many past experiences that cattle prefer pasture which has been properly fertilized. Experimental pastures have been fertilized in certain parts and not in others. The cattle on these pastures would graze the fertilized portions and leave the unfertilized part practically untouched. Dr. W. A. Albrecht of the the University of Missouri tried a similar experiment with hay. He put hay from a well fertilized field on one stack, and hay from a poorly fertilized field on another. He then turned cattle on the two stacks and found that they completely consumed hay from fertilized field before starting on the stack from the unfertilized field.

Although our state of South Carolina is not too deficient in minerals, a great part of our country is deficient in calcium, phosphorus, sodium, chlorine, iodine, iron, copper, cobalt, manganese, boron, magnesium, zinc, potassium and sulphur. In order to raise a good healthy grade of cattle, the growers in these deficient areas must doctor their "sick" soil. I might use the irrigationist's expression and say that it is not a matter of whether we can afford to adopt a pasture improvement program, but whether we can afford not to. If we are to have healthy cattle, we must first have healthy soil. And that means to apply lime to get the reaction right and then also supply such other elements as are found to be needed.



Cows Love Suni-Citrus Pulp

Suni-Citrus is rich in milk-making units, brimming with bovine health and happiness. That's why—

"They Moo For More"

Suni-Citrus Products Co

HAINES CITY, FLORIDA

Sales Agent: ASHCRAFT-WILKINSON COMPANY, ATLANTA, GEORGIA

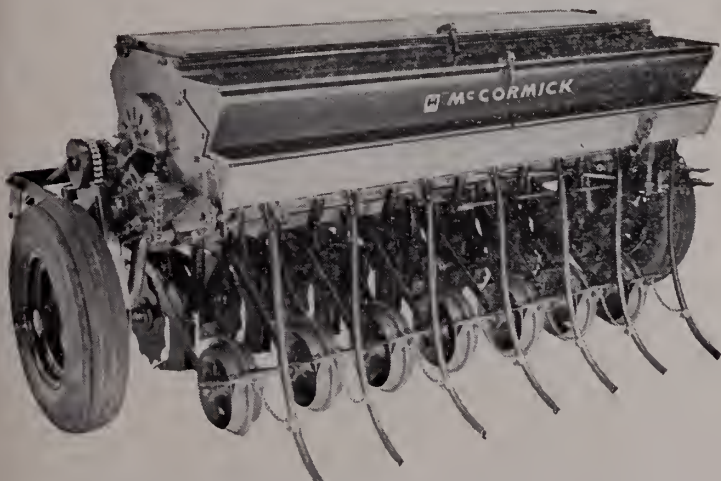
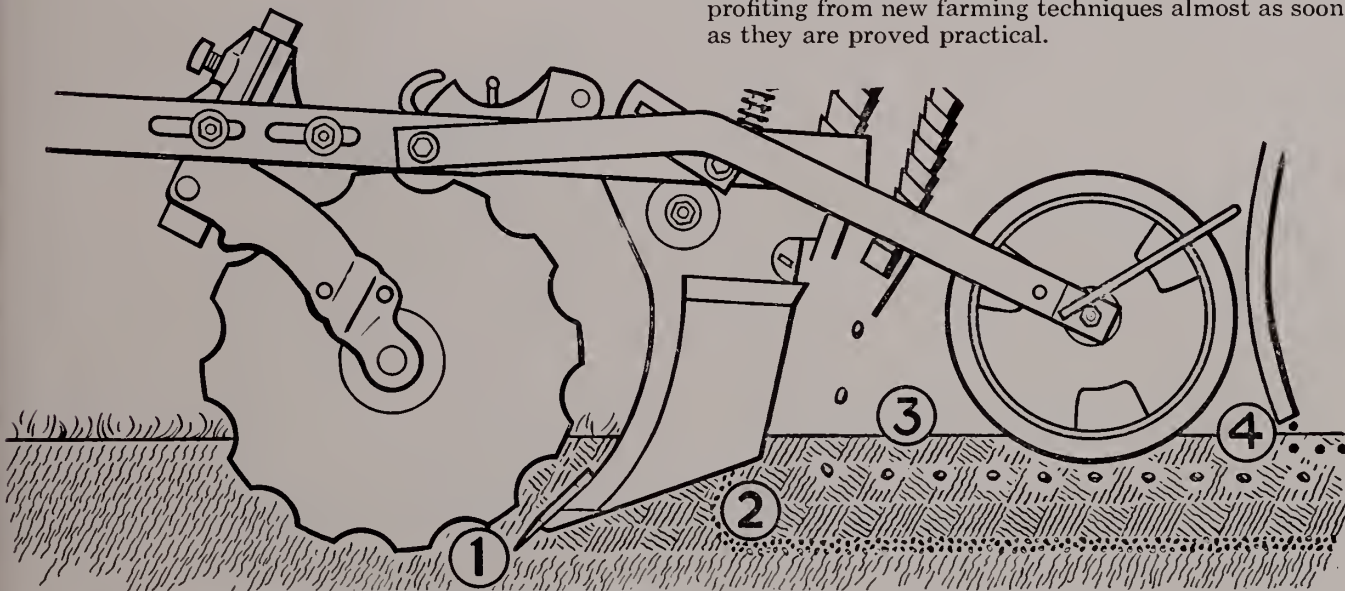
RENEWS PASTURES IN ONE PASS!

**New McCormick® pasture renovator,
developed by IH engineers, makes
pasture improvement practical**

Pasture renovation is no longer a complicated job requiring 4 to 6 separate operations. The new McCormick pasture renovator makes seed trenches and places commercial fertilizer, grain and grass seed in 3-deck strips—in one trip!

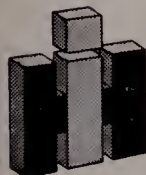
Deep placement of fertilizer, directly below the seed, produces better stands than broadcast distribution. This new pasture renovator also saves time, fuel, and up to 50 percent of costly grass seed. Most erosion losses are eliminated. Livestock can continue grazing pastures that are being improved. The McCormick Renovator also can be used for deep placement of commercial fertilizer, or as a conventional grain drill and band type grass seeder.

The McCormick pasture renovator is another example of the way IH engineering keeps product development abreast of the latest discoveries of our crops and soils scientists. This helps farmers to start profiting from new farming techniques almost as soon as they are proved practical.



The McCormick pasture renovator places commercial fertilizer, nurse crop, and grass seed together in each of seven strips spaced eleven inches apart.

- 1.** Colter cuts sod. Diamond-point applicator makes narrow trench as deep as 4 inches.
- 2.** As fertilizer is released in the trench, a layer of soil falls over it to protect seed from burning.
- 3.** Oats and other unhulled seeds are released ahead of the press wheels which firm soil around them.
- 4.** Clover and other hulled seeds fall into moisture-holding grooves either before or after the press wheels.



INTERNATIONAL HARVESTER

International Harvester products pay for themselves in use—McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Crawler Tractors and Power Units . . . Refrigerators and Freezers—General Office, Chicago 1, Illinois

HOW THE STARS GOT STARTED...

Eddie Sauter and Bill Finegan, leaders of America's most excitingly-different dance band, met in 1939 as struggling young arrangers. Ed had studied trumpet and drum at college, worked up to arranging for "name" bands; Bill had studied in Paris, won a spot with Tommy Dorsey.

After 13 years of pooling new ideas, they formed their own band. It clicked!



Sauter-Finegan Orchestra

AMERICA'S NEWEST, MOST COLORFUL DANCE BAND

Eddie Sauter says:

"I'VE TRIED MANY BRANDS, BUT I GET MOST PLEASURE FROM CAMELS. YOU WILL, TOO!"

Bill Finegan says:

"WITH ME, CAMELS CLICKED INSTANTLY. THE FLAVOR'S HOW I LIKE IT, THE MILDNESS JUST RIGHT."



For Mildness and Flavor



Start smoking Camels yourself!

Smoke only Camels for 30 days and find out why Camels are first in mildness, flavor and popularity! See how much pure pleasure a cigarette can give you!

CAMELS AGREE WITH MORE PEOPLE

THAN ANY OTHER CIGARETTE!

The Agriarian

OFFICIAL STUDENT PUBLICATION

CLEMSON, S. C.

THE CLEMSON A & M COLLEGE

MARCH 1954



Featuring

The

Sand

Hills

of

South

Carolina



SERVING THE FARMERS
IN NORTH AND SOUTH
CAROLINA SINCE 1906



Planters
Fertilizer & Phosphate Co.

CHARLESTON, S. C.

CHARLOTTE, N. C.

THE AGRARIAN

Volume 13 The Clemson Agricultural College Number 3

Edwin F. Nolley
Co-Editor

Joe W. O'Cain
Associate Editor

James K. Henderson
Co-Editor

John M. Turner
Advertising Manager

Jackie Sanders
Business Manager

Alva L. McCaskill
Circulation Manager

Jerry Hammett -- Feature Editor

Ray M. Buck ----- Dept. Editor Douglas Owens ---- News Editor

Departmental Writers—

William C. Dailey, W. D. Barton, E. M. Rast, Bill Pressley, William E. Byrd, Gene Norris, Derrick Blocker, Claude L. Mullwee, Jimmy Young, J. David Martin, Tommy Eleazer, Jack D. Edwards, and N. C. Clark, Jr.

Advertising Staff—

Wilson K. Kaiser, Thomas E. Hayden, Baxter M. Hood

Circulation Staff—

Jackie Salters, Charles Johnson.

Advisory Staff—

Prof. Ben. E. Goodale, Prof. T. L. Senn, Ronald North (Student Advisor)

THE COVER

Foods which must be purchased in many areas of the United States may be grown in the back yard of almost any South Carolina farmer. Gene Norris gives some interesting highlights in his article, beginning on page 6, which are of vital interest to the farmer. Along with the production of food, must come adequate preservation.

IN THIS ISSUE

Agrarian Philosophy	Page 1
The Prospects for Agricultural Success in the Piedmont Area of South Carolina	Page 3
New Developments in Watermelons	Page 4
Let's Talk About Insurance	Page 5
Teaching Farm People to Produce and Preserve Food	Page 6
Agrarian News	Page 7
Vote of Investment	Page 7
Reforestation of the Sand Hills	Page 8
Soil Testing	Page 9
Leucocytozoan Disease in Turkeys	Page 12
Learning by Doing, F.F.A.	Page 14

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

AGRARIAN PHILOSOPHY

By Joe O'Cain, Associate Editor

"Howdy!"

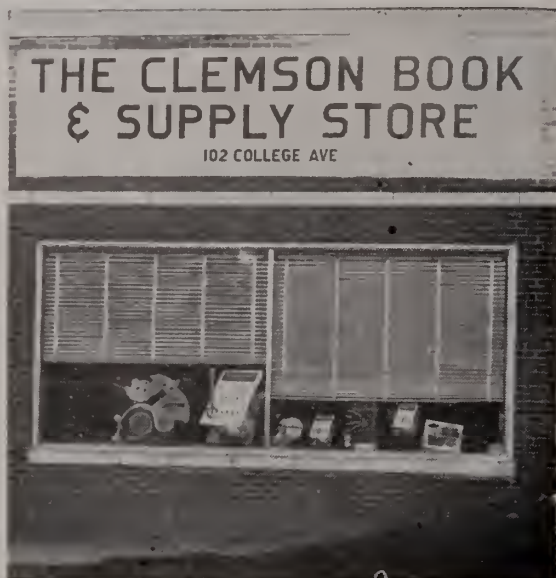
That's what he said when I first met him. And, by gosh, he meant it. He was just plain Farmer Brown, country bred, no two-faced, sugar-coated, politicking type. Just by looking at home, I felt at home, comfortable; and I felt that all was right with the world.

It just ain't natural to talk country-like even at a "cow college," but if lucky enough to dodge around a few dry-witted pedants, prigs, and purist, one is free to use a little slang. It's a humanistic impulse to use plain, old country talk. It adds a bit of novelty and originality to the sway of the constant changing English language. We had a lot in common, just me and him, as we perched on the old weather-painted barnyard fence. The sun shone down like a full-grown sun in June as his rented straw hat waved in the breeze. We talked about world peace, state elections, baseball, price supports, and lastly, the boll weevil.

There I was, talking to a rusty ole farmer—me all spruced up like any future teacher decked with tie, white shirt, clip board, and pencil behind my ear. This was the experience called off-campus teaching, but I believe, listed in the College Catalogue as "Directed Teaching." Great experience it was — experience not gotten from a classroom or lecture, but by really living in the outside world.

Farmer Brown's philosophy was the same as mine: believe in smiles and friendship created right from the heart. This farmer, he was an outstanding fellow, and would rank on top of my list. I could tell whether you'd meet him in the back country of Georgia or on the famed Fifth Avenue in New York, he would have the same walk, the same swing, and the same old country howdy. And the same howdy would greet both black and white, doctor, janitor

I thought for a moment after I looked at him . . . Doesn't such heart-felt little howdies and down-to-earth friendliness build stronger nations — and Oh, such closer kinships with greater knowledge, happiness, honesty, beauty, and God?



Two familiar old faces always welcome
you back to the campus.

CLEMSON BOOK STORE
Official College Book & Supply Store

L. C. MARTIN DRUG COMPANY
Serving Clemson Men Since 1908

W. B. Camp & Sons, Inc.

BAKERSFIELD, CALIFORNIA
and GAFFNEY, SOUTH CAROLINA

Buckfield Plantation

YEMASSEE,
SOUTH CAROLINA

Prospects for Agricultural Success In Piedmont Area of South Carolina

By N. C. Clark, Jr., A. H. '55

The Piedmont area of South Carolina has a much rosier prospect for agricultural success than it has had in the past. The main reason for this is the fact that industry has been moving into and expanding in this section.

Industry, while it competes with local agriculture for labor, benefits local agriculture by providing a strong market for agricultural products. Such farm products as milk, meat, eggs, and cereal grains are necessary for the well-being of industrial workers. In addition, such products as cotton, forest resources, and grains serve as raw materials for industry. The fact that a large part of the consuming area is relatively close to the producing area is a very significant one. In the eighteenth century, the South Carolina production area and the English market area were separated by the Atlantic Ocean and long periods of time were required to traverse it. In the nineteenth century, the Piedmont producing area and the New England market area were separated by the Atlantic seaboard. In the Piedmont of today, however, many of the farm products are produced, processed, transported and consumed within a 100 mile area. This advantage which Piedmont farmers have is indeed one which merits envy by other sections of the United States.

The climate of the Piedmont is rather mild. The frost-free period or growing season averages 220 days. The annual precipitation averages approximately 49 inches, and the precipitation during the growing season varies over the Piedmont from 28 to 31 inches. The soil, naturally fertile in places where it has been properly managed, is capable of retaining fertility if proper fertilization practices are conducted. Al-

so, the soil is of a heavy clay nature in many locations which makes the Piedmont an ideal area for forage production.

The Piedmont lies in the northwestern part of the state and extends in the northwest, from the lower parts of Oconee, Pickens, and Greenville Counties south-eastward to a line drawn through the counties of Edgefield, Saluda, Lexington, Richland, Kershaw, and Lancaster.

The most widely-found cash crop in the Piedmont is cotton. This crop does well under the climatic conditions of the Piedmont. In the past, production of cotton has been the sole cash-producing enterprise of farms in this section. Now, however, many farmers and farm owners are beginning to realize that this crop alone cannot utilize the labor, machinery, and land to the best advantage. These more progressive farm operators are turning to other enterprises which can supplement cotton as a source of income. Cotton will most likely remain in the Piedmont as a major crop, but for maximum utilization of production factors, particularly those of labor and machinery, it will be coordinated with other cash-producing enterprises.

The production of the cereal grains in the Piedmont is an important enterprise on many farms. Cereal grains that are produced include corn, oats, wheat, barley, and grain sorghums. Several feed and flour manufacturing plants in this section provide a close, steady market for grains. Although the rolling terrain is less conducive to extensive large-scale grain production than in other areas, the production of cereal crops is a good alternative for farm operators to take. It affords profitable utilization of land and machinery even when labor is relatively un-

available or expensive. In addition, this enterprise can be profitably coordinated with livestock production.

A crop enterprise that is more exclusive to Piedmont agriculture is the production of peaches. The climate, rainfall, soil conditions, and land formation make the Piedmont one of the major peach producing areas in the state and nation. Approximately 80 percent of the peach trees in South Carolina are found in the Piedmont area. Peaches are shipped to almost every part of the United States and they form a considerable part of the agricultural income in the counties of Spartanburg, Cherokee, York, Saluda, and Edgefield.

Beef cattle production is gaining a considerably prominent place in Piedmont agriculture. With improvement in breeding, stock has become more efficient utilization of available feedstuffs. The soil of the Piedmont being largely of a heavy clay nature enables farmers to establish good sods in their permanent pastures and also to provide good annual grazing crops for their cattle. Along with cattle production and pastures goes improved control of soil erosion. With properly managed pastures, Piedmont farmers can decrease soil erosion and also build up the fertility of their soils. Piedmont pastures have been shown to produce year-round grazing which is a decided advantage over many sections.

A number of livestock sale barns have sprung up in the various counties of this section and they are an aid to the commercial cattle producer in the selling of his animals. Also during the past year, a sale of cattle to be used as feeders in Pennsylvania and New Jersey was held in Greenwood. The feeder companies
(Continued on page ten)

New Developments in Watermelons

By C. L. Mullwee, V.A.E. '54

One of the more important money crops of the Sandhill region of South Carolina is watermelons, and like other crops, there are many prevalent diseases which limit the profitability of this crop. Two of the most disastrous diseases attacking watermelons are anthracnose and *Fusarium* wilt.

Anthracnose is characterized by numerous irregular black sunken spots on the foliage and fruit. It is particularly severe after a heavy rainfall or during seasons of prevailing wet weather. Under these favorable conditions for disease development, the microscopic spores of the fungus are scattered to nearby leaves by spattering rain drops, and also are washed along in drainage water to new areas. The moist leaf and fruit tissue provide excellent conditions for the spores to develop. After such periods, fields may have become so heavily infested with anthracnose that they appear to have been "burned over." Many farmers inaccurately attribute such severe injury directly to excessive rainfall.

Young fruits attacked by anthracnose are likely to become deformed and develop irregular, black sunken lesions or light-green pimples with a yellow cast in the center. These spots later turn pink due to the development of spore masses. Older fruits are usually marked by small pimples or large flattened lesions on the rind, often spoken of as "rain checks," "small pox," or "pock marks." These lesions become sunken and enlarged if the melons are shipped under moist conditions, and offer easy portals of entry to other organisms. In the past, seed treatment has been recommended as a preventive measure, but with the development of new resistant varieties, it is no longer necessary.

Fusarium wilt differs from anthracnose in that it is a soil-borne

disease. Wilt may develop in melons at any stage of growth and cause rapid wilting and eventually death. The fungus attacks the plant by entering the roots and plugging the water conducting vessels of the stem. A microscopic examination of a wilted stem would reveal tiny thread-like mold growths throughout the water conducting vessels. In this way death is actually caused by a lack of water.

Farmers who have wilt infested soil are often confronted with the problem of securing enough non-infested land each year on which to grow their melons because one of the most obnoxious characteristics of the wilt fungus is its ability to remain viable in the soil for a period of six years or longer. A seven-year rotation has been used with some success.

The state forestry commission has in the past leased to farmers for melon growing in return for clearing the land of scrub oak. In this way the farmers benefited from the use of non-infested soil, and the commission got the land cleared and were able to reforest it with pine seedlings.

Although rotation is helpful in wilt control, the control of drainage water from infested soil will help to prevent the contamination of other land. The use of stable manure, which is often contaminated with infested vines brought in with hay, should also be avoided. Another way in which wilt is spread is by the feet of livestock, which have been allowed to graze on wilt infested fields, and carry small bits of the soil to other fields.

The perfect answer to the problems would be a melon with a high resistance to both diseases, high taste appeal and good shipping qualities. Much work has been done in



Close up of a melon showing lesions caused by anthracnose.

the past few years toward securing a melon which would meet the demands of the grower in all respects. Such a melon has been developed recently by Mr. C. F. Andrus, of the Charleston Experiment Station. This melon, called the USDA 51-27, has shown excellent resistance to both anthracnose and wilt. As to taste, it has been heartily endorsed by the colored population, who are usually considered the South's finest judges of watermelon flavor. Another characteristic of this melon is its thin, yet tough rind, which gives it excellent shipping qualities. Even though this melon is grey, it is reported to have commanded a premium in 1953 on every market it reached. This together with its high per acre yields, exceptional uniformity, and short rotation requirement will probably make it the leading melon in the next few years.

Two other melons which possess varying degrees of resistance to both anthracnose and wilt are the Fairfax and Dunbarton. Both have given good results and commanded fair market demand.

(Continued on page ten)

Let's Talk About Insurance

By William E. Byrd, Ag Ec '54

Next to fertilizer for the crops, hay for the cattle and corn for the hogs, and gasoline for the tractor, insurance is one of the most important items of running a farm business, especially if the farm is mortgaged or a larger portion of the equipment is not fully paid for.

There are four types of insurance a farmer would be interested in. These are as follows:

- (1)—Crop insurance
- (2)—Fire insurance
- (3)—Life insurance
- (4)—Vehicle insurance

Then, there are other types of insurance which might interest certain farmers, but perhaps not the majority of this group. Some of these are as follows:

- (1)—Medical and hospital insurance
- (2)—General liability insurance

Let's begin our discussion by talking about crop insurance. Crop insurance is computed by using the law of probability in regards to the small farmer who stands a good chance of poverty as a result of a bad year and does not have enough savings to carry him over such disaster. It is also important in credit purchasing. In bulletin E-4, the Farm Credit Administration suggests crop insurance as a possible means of reducing production risk.

Fire is a problem which confronts most farmers both in connection with their dwellings and with other farm buildings. Usually the cost of this insurance is fairly high depending, of course, on the location of the particular farm with reference to sources of fire protection. Mutual companies attempt to offer fire protection to the farmers at greatly reduced cost, but still South Carolina rates high in respect to the cost of insurance against fire. Most farmers find it advisable to insure newer farm structures. Most mortgaged property is required to have fire insurance.

Life insurance may be had in many different forms. It is especially valuable to the young married



A Total Loss

--Photo courtesy of Clemson College Extension Service.

farmer who is buying a farm on credit. He wishes eventually to enjoy having a farm all to himself; but again would like for his wife and children to have it in case death should take him away. The cheapest way to insure this would be to get a "term" insurance policy for the amount of the mortgage and carry it for the period of which the farm is mortgaged. Term insurance is, of course, the cheapest, but many who can afford it prefer policies offering both protection and an opportunity to build up an "estate". Life insurance has many values other than protection during a period of credit financing.

Vehicle insurance is increasing in agricultural importance with more and more farmers operating trucks and automobiles in their businesses. In South Carolina, we have a financial responsibility law which makes this insurance almost imperative. Although automobile insurance is computed by using the law of probability and statistics from the past year or two, and a few of the larger farms could be rugged enough to withstand all disaster expense without much financial difficulty, small farmers should at least have liability policies on all of their farm vehicles. If the farm vehicles are

new and have much more usefulness in them, collision insurance may also be advisable.

Normally, in case of damage claims insurance companies are able to make settlements with much greater efficiency than are individuals. Trained adjusters who have made financial settlements in many cases can usually work with more technical knowledge of their subject, resulting in lower cost of operation for their company and consequently, lower rates for the policy holder. Usually mutual companies offer satisfactory policies at much lower net cost. The citizens often do wise to buy from a mutual company, however, it is risky to buy crop insurance from a company covering a small area because of the fact that disaster often strikes the area, not the farms of a few policy holders in the area.

In closing, it may be said that before considering buying an insurance policy, one should consider the cost of the policy compared with others on the same order, the reliability of the company, and all of the terms of the policy, especially the finer print. For information on Farmer's Mutual Fire Insurance in South Carolina, see bulletin No. 385, South Carolina Experiment Station.

Teaching Farm People To Produce and Preserve Food

By Gene Norris, V.A.E. '54

Everybody eats, food appeals to everyone, but how many people realize that the average person consumes approximately one ton of food per year?

Perhaps just as important as the quantity is the quality of food consumed. A variety of nutritional foods not only appeals to the eye but are necessary to help keep the body in a good physical condition.

Does it not seem ironical that the farmer, of all people, should have problems of feeding himself and his family? Problems! Yes, such as the cost of feeding a family. It may be surprising to know that it takes about \$1500 to feed a family of five for a year.* With a low average income and with an expected decrease in farm income this year, a real problem begins to present itself to farm people.

So what if food is necessary for good health, then is not the farmer spending his money wisely? Are farmers, though, enjoying the benefits of the good health he is paying for? In a survey made in 1937, it was found that over 90% of the children in a rural school district had one or more defects caused from an insufficient diet. In another study made by the South Carolina Experimental Station, it was found that only 20% of all farm families received a diet which could be classified as good.

To say the farmer has a problem would be incorrect; he has two problems. One is to reduce the expenditures for the food he buys and the other is to improve his diet. These two proverbial "birds can be killed with one stone". That stone is the production and preservation of more nutritional foods by farm families. At this point is where the agriculture teacher enters the picture. By his contact with farming people through both formal and informal classes, he has a unique

chance to sell the idea of more production and preservation of foods for the family.

Getting farm people to accept the idea of producing and preserving more food may not be as simple as it seems for many of them don't realize they even have a problem. The teacher's best plan of approach would be teaching his instructional groups: all-day boys, young farmers, and adult farmers, the necessity of producing and preserving more foods. This idea will probably take many lessons to completely sell all those concerned.

Probably a good starting point would be to teach a lesson on nutrition. Some of the things to include would be: (1) need for food, (2) nutrients required, (3) relations of diet to health, (4) the basic seven food groups, (5) inadequate diet of farm people.

After the students realize how important a proper diet is to their welfare, the next step will be to show the economy of producing food on the farm. A lesson of this type should include such things as: (1) amount of food needed by the family, (2) costs of foods, (3) economy of home production, (4) advantages of producing food on the farm.

The third of lessons and probably the most important is the actual production of home foods. This should include (1) steps in preparing a garden site (2) the kinds and amounts of each vegetable to raise (3) recommended varieties (4) planting time for each crop (5) fertilization (6) controlling insects and disease.

The final series of lessons should be taught on preserving the foods. The agriculture teacher should emphasize that preservation can be done best by canning in the home or community cannery and by freezing in home freezers and in freezer locker plants. Each method of preservation should be taken up separately.



A basket of health

In the case of the cannery, the pupils should be taught such topics as (1) advantages of using a cannery, (2) important steps in canning, (3) preparation and processing of vegetables, fruits, and meats. In freezing foods, the teacher should include such things as (1) the advantages of home freezer and lockers, (2) the preparation of food for freezer, (3) the essentials of freezing foods. Of course, what amount and kinds of food to be preserved should be taught in both cases.

The agriculture teacher can render the farmer a very worthwhile service by teaching him to produce and preserve more foods this year. In fact the problem was deemed so necessary that small group meetings of all agriculture teachers in South Carolina was called to discuss it. Not only has there been

(Continued on page twelve)

* For more information in this article see "The Production and Preservation of Foods by Farm Families."

Agrarian News

DEPARTMENT OF AGRICULTURAL
ECONOMICS AND RURAL SOCIOLOGY

Douglas Owens, News Editor

L. E. Hendricks, Ag Ec graduate in the class of 1931 is a farmer and implement dealer at Easley. He also serves as Supervisor of the Pickens County Soil Conservation District.

W. M. Dillard, Ag Ec '35, is owner and manager of a sporting goods store in Anderson, S. C.

A. V. Bethea, Jr., Ag Ec '38, is farming at Latta, South Carolina.

G. H. Bonnette, Ag Ec '41, is Chief Clerk and Accountant for the South Carolina Extension Service at Clemson.

O. R. Smith, Ag Ec '33, is Youth Editor for the *Progressive Farmer*, Birmingham, Ala.

M. C. Rochester, Ag Ec '31, is Leader, Agricultural Economics Extension work at Clemson, S. C.

T. E. Richardson, Ag Ec '38, is farming at Barnwell, S. C.

L. M. Strunk, Ag Ec '43, Coatsville, Pa., has recently perfected and put on the market the Strunk Chain Saw. You may see his advertisements in the leading magazines.

R. A. Riley, Horticulture graduate in the Class of '43, is now General Manager of Florida Fruit Canneries, Frost Proof, Florida.

Joe Bolick, Joe E. Land, Mat Moore, Jim Hiers, Lem Bailey, and J. B. Monroe are some of the Clemson graduates which are now stationed in Korea.

Recently Mr. J. A. Cash, Jr., and Mr. Lansdell Lipscomb, representatives of the Tobacco Division of the Agricultural Marketing Service of the U.S.D.A., met for several days with classes in the Agronomy Department in order to familiarize the students with the national tobacco program.

Although the main topic of discussion was marketing of tobacco almost all phases of tobacco production were discussed. Illustrative slides of the tobacco industry from the plant bed to the manufactured cigarette were shown, and also representative samples of the standard grades of tobacco were examined by the class.

This specialized work is available every spring, and everyone that attended received some good information on tobacco.

VOTE OF INVESTMENT

By Joe O'Cain, Associate Editor

Every four years we Americans get to witness one of the most interesting and amusing races — the race for the presidency. The various candidates place themselves on their respective elephants and donkeys and start kicking up the mud!

One of the biggest investments that the American farmer can make is to read and find out where the various presidential candidates stand on different farm issues. What about price supports, Government assistance for natural resources, agricultural research rural medical aid, and farm ownership.

What is described to be one of the greatest scoops any American magazine will make in the near future, *The Progressive Farmer* magazine last year made an extensive survey of vital farm issue questions asked to leading presidential candidates. For example, it was found that all five of the candidates interviewed favored hospital aid and medical services for rural people and the poorer classes of our population. Eisenhower, Barkley, Russell, Kerr, and Kefauver, the five interviewed pledged to insure this aid. Eisenhower added, however, "we need the same safeguards of local responsibility for administration as for educational aid."

Mr. Farmer, learn what your candidate stands for before you vote. Whether it's an election for the President of the United States, the State Senate, or county House of Representatives, make your choice a good four-year investment.

* * * * *

A Prelude Beautiful to the Morning . . . "Let peace, O Lord, Thy peace O God, upon our souls descend; from midnight fears and perils, Thou, our trembling hearts defend." . . . And, O God, as we bow our heads in prayer while the quiet rhythm of heaven surrounds us, we realize that Thou almighty hand hast created the flowers in the spring; that Thou art the steerer of the universe and the Architect of men's souls. Fill us with a portion of Thou eternal energy and grace, and grant unto us a new life of capacity and beauty . . . Now we arise, shine! for Thy light is come, and the glory of the Lord is risen upon thee. Thru Christ our Lord we pray, Amen.

Reforestation of the Sand Hills

By G. H. Moody, Pre-Forestry

The Sand Hill Region of South Carolina also known as the Scrub Oak Lands is now being cleared, to some extent of the undesirable scrub oaks and reforested with pines. This reforestation program initiated is aimed at building up the productivity of the land and increasing the value of the forest stands.

In the past the Sand Hills have been heavily cut over, badly burned and generally abused. The needed correction of these abuses will require large-scale reforestation of long duration with efficient fire protection, and other positive forestry practices. Important experimental work in this respect is being done by the South Carolina State Commission of Forestry on the Sand Hills State Forest embracing some 92,000 acres of land located in Chesterfield and Darlington Counties. This experimental program is centered chiefly upon the most economical and practical means of converting the inferior scrub oak woodlands into productive pine stands.

There are large areas of idle land in the Sand Hills; a limited acreage of this land can be cleared and farmed again, some will be regenerated naturally, but most of the non-agricultural idle land will have to be reforested artificially. Some small land owners and lumbermen of this section having enlisted aid of the South Carolina State Commission of Forestry, and other interested agencies are clearing the Sand Hills of the undesirable scrub oak and reforesting the cleared land with Longleaf and Slash pines.

Elimination or curtailment of potential Scrub Oak competition is one of the major problems in reforestation of the Sand Hills. It has been found that the scrub oak has to be either completely removed or its root system drastically disturbed so as to prevent further oak growth. This has to be done because the in-

tensive root system of the scrub oak saps practically all of the moisture and nutrients from the soil thus hindering the development of the interplanted pine seedlings. Once these seedlings become established they will predominate on the treated areas.

Past historical records show that the Sand Hills once supported extensive stands of Longleaf pine which yielded yellow pine lumber of high quality as well as naval stores products. But the indiscriminate cutting practices of the past stripped the Sand Hills of the valuable Longleaf pine for the benefit of Scrub Oaks. Proper measures were not taken to replace the pines or to control the scrub oak and the latter eventually took over the land.

The Longleaf pine grows best on well drained Sandy soils typical of the Sand Hill Region. Once established it will vegetate even on the poorest sites, though its growth will be slow. This species is also the most immune Southern pine to the damages caused by fire. However, its natural regeneration meets with difficult obstacles. This is especially true in the Sand Hills when poor sites, high ground temperatures during the summer months, and intensive root competition are factors hindering the longleaf's regeneration.

The Slash pine is new to the Sand Hills. It is being used for the reforestation of this area because of its adaptability to the sandy sites predominating in this region. The slash pine has a rapid initial growth and reproduces readily. On cut over land this species is very aggressive and quickly covers abandoned land especially if the soil is humid. Competitive ability of slash is higher than that of longleaf pine; While young it is more immune to uprooting by hogs than longleaf pine of similar age. All these characteristics will cause most likely, the continued

use of slash pine for reforestation of the Sand Hills. In addition the species produces lumber of quality comparable to that of longleaf pine; it also yields naval store products.

The reforestation of the Sand Hills by the two pines is a large task requiring a prolonged period of time. It is hoped, however, that this task will be realized eventually and the Sand Hills will, from there on, support valuable stands of timber instead of the present scrubby oaks of low economic value. The pine stands of the future, under proper forestry guidance, will become important and positive components of the economy of South Carolina. Land values of the Sand Hills will increase not only because of the direct and secondary returns which will be derived from forest harvest, but also because of the indirect returns such as erosion control, enhancement of recreation and other secondary products associated with the presence of pines.

* * * * *

DO YOU HAVE SICK CORN?

Nitrogen starved: Leaves turn yellow along the midrib—shrivel and fire.

Phosphorus starved: Young plants often have a purplish cast—tips may die.

Dry weather: Leaves roll or twist without loss of green color — later unfold, if moisture conditions improve in time.

(Corn in South Carolina, Clemson College Extension Service)

Education must be such that people know how to select and prepare food properly. The greatest hopes for the future lie in making people see that their health lies in their own hands.

The Problem of Food, Jennie I. Rowntree

SOIL TESTING

By B. L. Walpole, Agron '55

Since the expansion of the Soil Testing Laboratory at Clemson in 1951, many farmers, realizing the importance of proper soil fertility and soil management, have had their soils tested for pH, phosphorus, and potash. Dr. Albritten, Laboratory Supervisor, estimates that a record of 18,000 to 20,000 samples will be tested this year.

Good soil test results depend upon good soil samples. Thus, the proper collection of soil samples is a good way to start the climb to peak farm profits. Listed below are ten steps in taking a sample as reprinted from **National Fertilizer Review**, a publication of The National Fertilizer Association, Washington, D. C.

1. Get information sheet from county agent; get pint-size ice cream cartons.

2. Divide farm into fields for sampling so that you get one composite sample from every 5 to 10 acres. Areas that distinctly differ in crop growth, in the appearance of the soils such as light or dark colored or have had different past management (liming, manuring, fertilizing or cropping), should be sampled separately.

3. Take composite sample from each area 5 to 10 acres in size. Scrape away surface litter. Then take a small sample of soil from the surface to a depth of about 6 inches (or plow depth) in 15 to 20 spots.

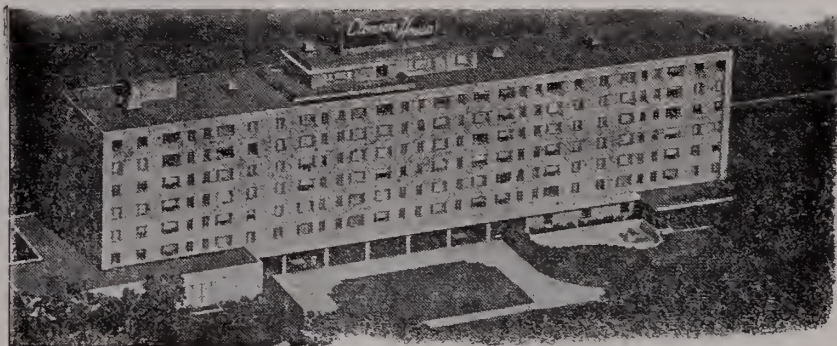
4. Don't sample unusual areas because you may get unusual soil. Avoid these areas when you take samples: dead furrows, terrace channels, windbreaks, snow fences, old fence lines, marshy spots, areas near lime rock roads, forested areas, near the boundary between slopes and bottomlands and, of course, where you applied band fertilizer last season.

5. Use proper sampling tools if available. Satisfactory samples can be obtained with an auger, spade, trowel or soil tube.

6. Sample to plow depth except for pastures. Pasture samples should

Irrigation
AS
Crop Protection
Domestic Water Systems
Disston Saw-log
AND
Pulpwood Chain Saws
COLUMBIA SUPPLY CO.
Phones LD-64 Local 5121
COLUMBIA, SOUTH CAROLINA

"One of the best in the South. . . ultra-modern. . .", says



Clemson
House



In the foothills of the beautiful Blue Ridge Mountains, you'll find the Clemson House located in a unique setting - right on the campus of Clemson College. Here you will find all of the services of a great metropolitan hotel yet you will be far away from the noise of a large city. And you'll enjoy the beautifully landscaped grounds and the flower beds. The splendid accommodations and the excellent cuisine offered at the Clemson House are combined with warm friendly hospitality and fine service. The Clemson House is a gem among fine hotels and the rates are almost unbelievably low. All public rooms are air conditioned. Four dining rooms and the Tiger Lounge and Coffee Shop. There is swimming, fishing and golf nearby.

Fred L. Zink, Jr., Manager

On East Edge of Clemson, S. C. On U.S. 78, 123 & State 28

be taken from the upper 2 inches.

7. Remove soil ribbon from center of slice if you use a spade. First dig a V-shaped hole to plow depth and remove a 1/2-inch thick slice of soil from one side of the hole. Then trim off from each side of the spade all but a thin ribbon of soil down the center of the spade face. Place this in a clean bucket.

8. Mix well in clean pail so that each single sample is completely mixed with other samples from the same area. Then take out about a half-pint of the soil for testing. Discard the remaining soil. Where row crops have been planted, take samples between the rows.

(Continued on page twelve)

**Pendleton Fertilizer
Issaqueena Feed
Cottonseed Products
Certified Cottonseed
Insecticides**

**PENDLETON OIL MILL
PENDLETON, SOUTH CAROLINA**

AGRICULTURAL SUCCESS

(Continued from page three)

who purchased cattle had been previously obtaining their feeders from some of the western states. They were favorably impressed with the cattle production potential in the area around Greenwood, and a similar sale was held this year.

Commercial cattle producers are beginning to realize the value of better-grade herds and thus provide a market for purebred bulls which is met by purebred breeders who have incorporated good blood lines in their herds. In the last two annual bull feeding experiments and sales sponsored by the Animal Husbandry Department here at Clemson, the highest selling bulls were from the Piedmont county of Laurens. In the last such feeding experiment and sale, Piedmont farmers consigned by far the greater proportion of bulls sold.

Dairying provides a major proportion of the agricultural production pattern because of the demand in the more densely populated areas for fluid milk. As with beef cattle, Piedmont soils are capable of producing very good forage for dairy animals and also is capable of and is producing much of the concentrated feedstuff necessary for the feeding of dairy cattle. Dairying provides a steady income for Piedmont farmers.

A major boost to the dairy industry in this section is the artificial insemination program carried on by the Dairy Department. At present, Piedmont dairymen are taking advantage of, and are benefitting from this program. The superior proven sires in the Clemson bull stud are enabling the small producer to have the services of a bull he could not otherwise afford. This improved breeding is enabling the dairyman to raise his milk production per cow by building his herd with daughters of this superior breeding.

Poultry production in the Piedmont has been on an increase for the past few years but still fails to meet the demand. Many broilers and eggs continue to be shipped in. Thus, there is plenty of room for expansion even today. The poultry industry, like many other enterprises, has a year-round income and also a constant labor requirement. Farmers of the Piedmont should not slow their expansion of the poultry industry until they are at least able to supply the needs of their immediate vicinity.

Pork production in the Piedmont is not nearly so extensive an enterprise as it is in other areas. It has possibilities of becoming more important and Piedmont agriculture would benefit from more production of hogs. The hog is an excellent way to market farm-grown grains, espe-

cially when prices of grain are low and prices of hogs are high. Also, the pastures of the Piedmont, when properly managed, can save a considerable amount of grain needed to grow hogs to market weight. Grazing in the Piedmont can be furnished for hogs 365 days a year and much or all of the grain needed for fattening the hogs can be produced on the farm.

Many acres of land in the Piedmont cannot be utilized in any of these enterprises and are devoted to the growth of forestry products. When properly managed, a farm woodlot can add a large amount to the income in addition to producing lumber and posts for farm improvements. When the Piedmont was settled, many acres of land were cleared that were too steep, rocky, or infertile to be profitably cropped.

Aromatic tobacco, commonly known as Turkish tobacco, is a promising new crop in the Piedmont area. The number of acres planted to this crop has more than doubled during the last two years. Research workers are making progress toward development of labor-saving methods and more efficient ways of curing the tobacco leaves which have been the chief stumbling block in the commercial expansion of the crop thus far.

These crops and other enterprises of Piedmont farms by no means constitute all of the income-producing factors of this section, but they well represent the large number of different lines of production that Piedmont farmers have to choose from. Combinations of several different enterprises have been worked together on individual farms and diversification along these lines is highly desirable. The Piedmont faces a challenging agricultural era and is rapidly becoming equipped to meet this era with determination to succeed.

**NEW DEVELOPMENTS
IN WATERMELONS**

(Continued from page four)

Even though these greatly improved varieties have been developed, the end has not been reached. Research workers are constantly striving toward new and better melons, so that the farmer may steadily increase his cash income and enjoy better standards of living.

insects

YOU SHOULD KNOW

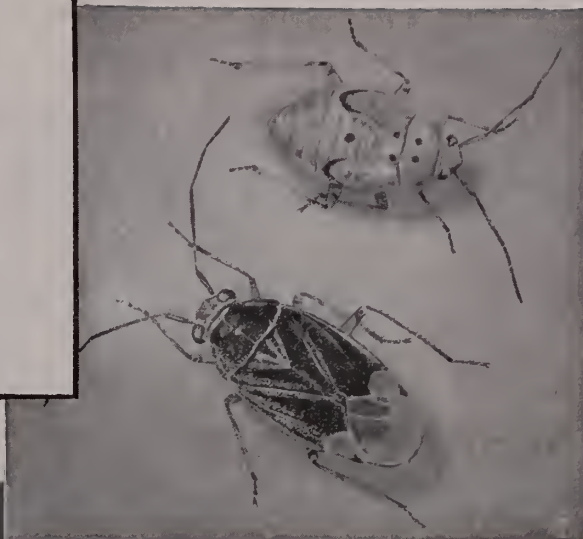
*How To Identify
These Crop Destroyers*



WEBWORMS

Loxostege similalis (Guen.)
and *Loxostege commixtalis* (Wlkr.)

Caterpillars of these moths web together the tops of plants, leaving only skeletons of leaves and stems. Masses of 40 to 50 overlapping eggs are deposited on the underside of leaves. The eggs hatch within four or five days into caterpillars which feed on the leaf. The insects overwinter as caterpillars, or pupae.



TARNISHED PLANT BUG

Lygus oblineatus (Say)

A destroyer of seed crops, these insects suck the sap of plants, retarding plant growth. The bug's eggs, laid in the tissues of plants, hatch into small, green, wingless insects. They develop rapidly and take on the mottled brown, black and red appearance of the winged adult. Adults are about $\frac{1}{4}$ inch in length.



CLOVER SEED CHALCID

Bruchophagus gibbus (Boh.)

This small, black, wasplike insect may infest as much as 85 per cent of an entire alfalfa crop, often causing losses of 50 pounds or more of seed per acre. The female lays a single egg in newly forming seed. The larva which hatches eats the seed contents within a few days, then pupates within the seed pod. Six generations may appear per season.

toxaphene

DUSTS • SPRAYS

*For full-color booklets showing
these and other insects write to Hercules*



CONTINENTAL GRAIN CO.

ANDERSON & EASLEY, S. C.

Buyers of All Farm Grains

Manufacturers of
Arrow and Sunny South Feeds
for
LIVESTOCK and POULTRY

ETIWAN FERTILIZER COMPANY

CHARLESTON, SOUTH CAROLINA

INDEPENDENT — PROMPT — RELIABLE

Manufacturers Of
DEPENDABLE FERTILIZERS SINCE '868

TEACHING FARM PEOPLE

(Continued from page 6)

meetings dealing with this problem, but also publications have been written and released on the subject. One of the most complete is **The Production and Preservation of Foods by Farm Families** published by the State Department of Education. Through his instruction on food the agriculture teacher can make the farmer "healthier, wealthier and wiser."

SOIL TESTING

(Continued from page 9)

9. Fill out information sheet as fully as possible so that the soil testing laboratory can give you a detailed report.

10. Number samples — Keep record and if possible prepare a map or sketch of the field from which samples were taken. Double check the numbers on the cartons and the information sheet to see that they are marked correctly.

Leucocytozoan Disease of Turkeys

By Dr. D. J. Richey
Associate Poultry Pathologist

Leucocytozoan disease of turkeys is under investigation by workers of the Poultry and Zoology-Entomology Departments of the S. C. Agricultural Experiment Station. Cooperating very materially are — members of the State Board of Health, the Livestock Sanitary Department and the Entomology Research Bureau of the Agriculture Research Service — USDA. In the study an attempt is being made to 1) break the cycle of infection between the blackflies and the turkeys and 2) prevent the parasite from developing in the infected bird.

Blackflies are small, stout-bodied flies whose larvae live in flowing streams, clinging to rocks and other submerged objects. The adult fly rises to the surface of the water and takes flight at once. Females feed on turkeys, sucking blood and transmitting the parasite from an infected bird to a normal bird. Methods of blackfly control are being studied by members of the Entomology and Poultry Departments.

Young turkeys of only a few weeks, and up to 12 or 15 weeks of age are chiefly affected. Visible symptoms usually last for only 2-4 days, at which stage the birds die or recover. Birds that recover usually suffer no serious effects but remain "carriers" for several months. Six to eight months after infection most of the parasites disappear from the blood stream. However, some birds develop a chronic disease and their blood may contain a large number of the parasites for several months.

The disease is not transmitted by direct contact from sick birds, or "carrier" birds, to well birds. The parasite goes through a sexual life cycle in the body of the blackfly, its most important transmitter.

During the coming months a statewide survey is planned to determine the extent of the infection in turkey flocks of the state. As many flocks as possible will be checked and the cooperation of the turkey growers of the state is requested.



ЭТО ПОСЛЕДНЯЯ КАПЛЯ!

they just
can't seem to collectivize
hands that touch the soil

Behind the iron curtain today a lot of commissars are saying, "ЭТО ПОСЛЕДНЯЯ КАПЛЯ!" We would say, "That's the last straw!"

You see, it has been the commissar's job to "collectivize" the farmers . . . to put the state between the man and the land. But, reports tell us, the collectivizing job is going badly. The muzhiks (little farmers) and the kulaks (big farmers) are just not falling in line.

Even in curtain countries, folks who live by the land have inherited the freedom of the soil. The knowledge that a man should be free to make his own decisions seems to rise from the furrows to make its indelible mark.

Throughout history, serfdom has never produced good farmers. That's easy enough to understand . . .

Can you imagine a farmer who no longer makes his own decisions letting the moist, spring-warmed earth fall through his fingers? Can you picture a state-controlled farmer rubbing out kernels of wheat in the palm of his hand . . . blowing away the chaff and sampling the grain? Can you see a party farmer terracing his land, seeding waterways, or walking through the "south 40" with his sons? Can you picture such a farmer buying Modern Machines to boost his production and better his lot, or a farm-equipment dealer playing a prominent part in community affairs, taking a real interest in modern agriculture?

Hardly!

It takes free men to work the soil!

MANUFACTURERS OF MM VISIONLINED TRACTORS, THE UNI-FARMOR, MODERN MACHINERY FOR THE FARM



MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA

Your Trade Marks for Quality Seed



Producers
and
Distributors of
SOUTHERN
FIELD
SEED



Exclusive Producers of
TABLE JOY Hybrid Sweet Corn
"All McNair's Seed Are Grown on McNair's Farms"
McNAIR'S YIELD-TESTED SEED CO.
LAURINBURG, N. C. Phone 388 or 502

F.F.A. Progresses

For the first time in Clemson's history the Vocational Agricultural Education practice teachers are working off the college campus in high schools located throughout South Carolina. The twenty-two Clemson men who will receive their Business of Science degrees and Teachers' Certificates this June have fitted in well as part of the working faculty in the eleven various high schools, two men being located at each school. Since all of these V.A.E. men are busy organizing, promoting, and leading the various high school F.F.A. chapters throughout the state as a part of their practice teaching in Vocational Agriculture Education, it is appropriate that the Clemson Agrarian, published by the students in the School of Agriculture and the Department of Agricultural Education, feature this article on the work, purpose, function, and a general review of Future Farmer work.

"Learning to do" by doing, many outstanding farm projects have been undertaken by the various F.F.A. Chapters and active Young Farmer organizations. The projects vary from farm machinery repair to the raising of guinea pigs, from better butter-making to agriculture journalism.

* * * * *

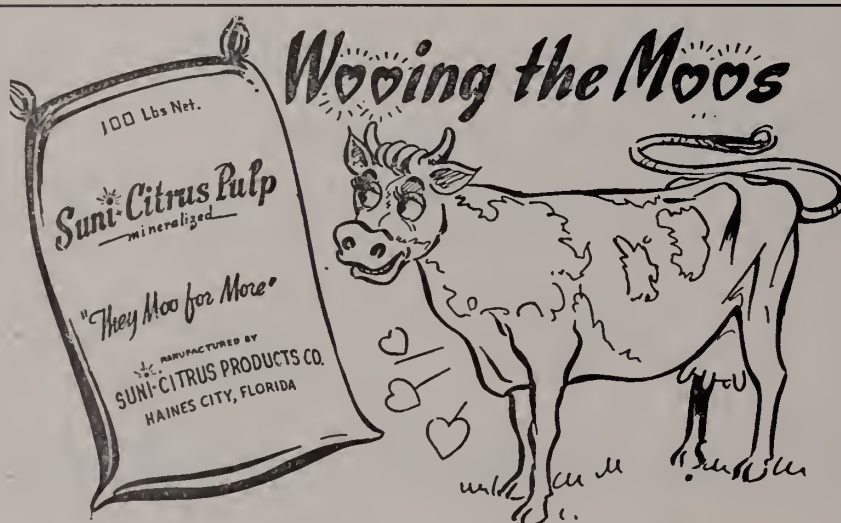
Hybrid corn and pimienta pepper seem to be a favorite of the Seneca (South Carolina) High School F.F.A. Chapter, over 75 percent of the first year ag boys having planted these crops this spring.

Herefords polka dot the R. M. Furtick farm in the Salley Community now since son Jack has started in the beef cattle business. This project originated from one of the federation bulls from the Sears-Roebuck Foundation.

In an old edition of the South Carolina Young Farmer Magazine the Swansea Future Farmers announced that one of their projects was selling tomato plants to local citizens. The group actually constructed the hot beds, arranged for heating and cared for the plants themselves.

* * * * *

Needless to say, practically all of the teachers of agriculture in South Carolina are graduates of Clemson College in the Department of Vocational Agricultural Education.



Cows Love Suni-Citrus Pulp

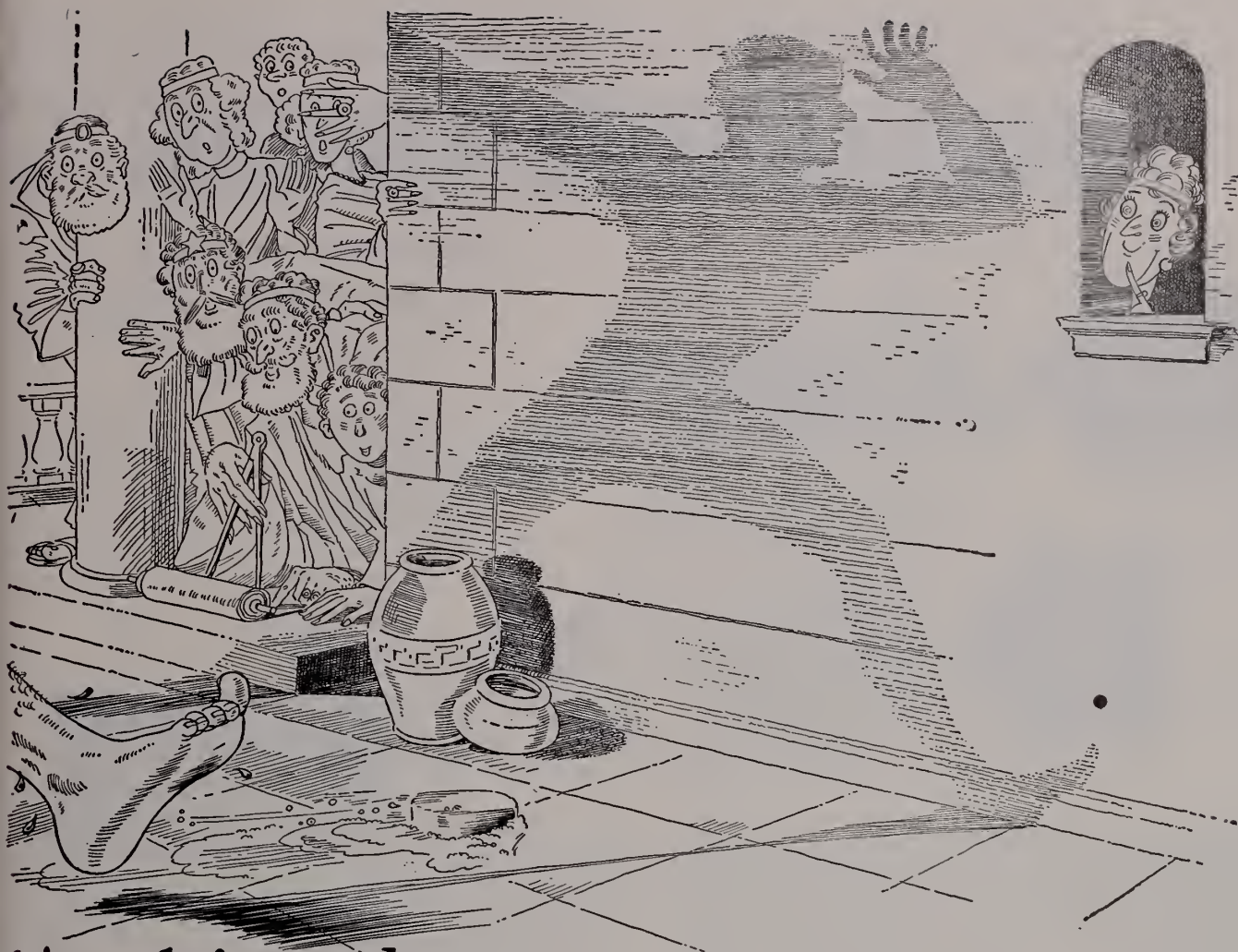
Suni-Citrus is rich in milk-making units, brimming with bovine health and happiness. That's why—

"They Moo For More"

Suni-Citrus Products Co

HAINES CITY, FLORIDA

Sales Agent: ASHCRAFT-WILKINSON COMPANY, ATLANTA, GEORGIA



Archimedes Had a Word for It . . .

REMEMBER Archimedes?

He was a brilliant scientist and mathematician back in the third century B.C. But for all his contributions to the study of physics and mechanics and for all his inventions and discoveries, Archimedes probably is best remembered for a trip he made—one that ranks in fame with those of Lady Godiva, John Gilpin, and Paul Revere.

That was the day Archimedes, while bathing, was fishing for the soap and came up with his famous theory of liquid displacement, which, in so many words, holds that a body immersed in a liquid gives up, or yields, as much of its own weight as the weight of the displaced liquid. It's said that he became so excited at his discovery that he forsook the tub and, sans so much as a terrycloth towel, raced through the streets, shouting "Eureka! Eureka!"

Now, even in our own radio-active age, Archimedes would be considered quite a "brain," and as such, probably would be the first to point out that his displacement theory

applies to each of us in everyday life—that *we get out of life just what we put into it*, no more and no less. He would probably point out the holes in the tempting "the-world-owes-me-a-living" theory, and remind us that we are each charged with certain obligations to God, country and neighbor, and our success depends upon the weight we place on them or how well we fulfill those obligations. He would say that such obligations are all part of the *real cost of living*, and we only get what we pay for.

He might add, too, that when we've accepted his theory and put it in practice, then with him we can shout to the world, "Eureka! Eureka!"

Which is to say, translated from the Greek: "By gum, I've got it!"

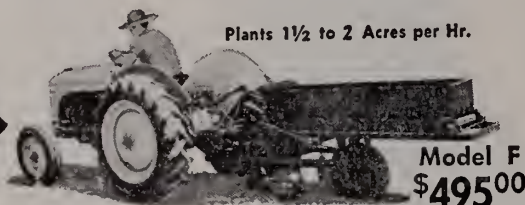
JOHN DEERE
MOLINE, ILLINOIS
 Quality Farm Equipment Since 1837



BERMUDA SPRIG PLANTERS

COMPLETELY AUTOMATIC

MODEL F
for FORD and
FERGUSON
TRACTORS
3 Point
Direct-Connected
Bermuda Sprig
Planter

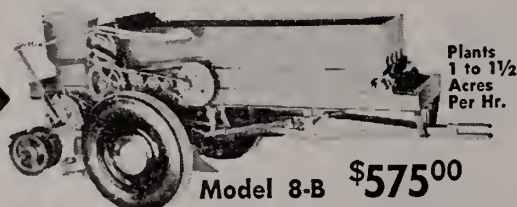


Plants 1½ to 2 Acres per Hr.

Model F
\$495⁰⁰

The sprig planter is an implement for the planting of Bermuda Grass Sprigs. It does the complete planting job—opens furrows, spaces sprigs, spreads fertilizer, closes and packs furrow.

MODEL 8-B
BERMUDA
SPRIG
PLANTER
... For Any
TRACTOR



Plants
1 to 1½
Acres
Per Hr.

Model 8-B \$575⁰⁰

- FASTER
- CHEAPER
- BETTER

MODEL 10-B
2-row

PLANTS TWO ROWS
36 INCHES APART.

\$995⁰⁰

WRITE FOR FOLDER ON
BERMUDA SPRIG PLANTER

H. L. PRAY
MANUFACTURING CO.

1240 N. HARVARD, TULSA, OKLA.

SHULER & SMOAK, INC.

Seeds—Fertilizers—Agr. Chemicals

(Serving South Carolina Farmers since 1919)

SPECIALIZING IN:

Otootan Soybeans	Seed Corn
Biloxi Soybeans	Cottonseed
C-N-S Str. 4	Cattail Millet
C-N-S Str. 24	Combine Milo
Du Pont Farm Chemicals	

Phone 100

Orangeburg, S.C.

"Aren't you ashamed," the judge asked the man, "to have your wife support you by taking in washing?"

"Yes, I am, Your Honor," he replied. "But what can I do? She's

too ignorant to do anything better."

* * * * *

The average man can tell all he knows in one hour. Then he begins to talk about women.

Husband (after an hour of furious quarreling): "I only wish you were a man."

Wife (sweetly): "So do I, darling. I think there should be at least one in every family."

* * * * *

Student: "But, officer, I'm a college student."

Traffic cop: "You'll get a ticket anyway, ignorance is no excuse."

* * * * *

An old storekeeper in Kentucky was taking his last breaths. A sorrowing family gathered around his bedside. "Is Ma here?" he asked wearily. "Yes, Zeke," she replied. "And my oldest son?" "Yes." "And the five girls?" "Yes, Zeke." The failing man struggled mightily to a sitting position. "What's the big idea?" he shouted, "Who's tending the store?"

* * * * *

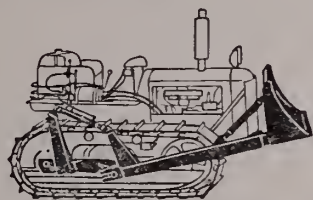
A college student is one who enters his alma mater as a freshman dressed in green, and emerges as a senior dressed in black. The intermediate process of decay is known as a college education.

A report to you about the men and machines that help maintain International Harvester leadership.

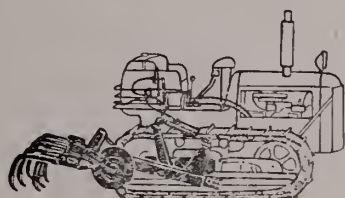
NEW McCormick® combination carrier for INTERNATIONAL® CRAWLERS

**...one frame for dozing
and tool bar tillage!**

Simply
head in
for dozing



back in
for tillage!



Build ponds, clear land, make cantours, move dirt—do anything any farm dozer will do, with the big capacity blade for the new McCormick combination carrier.



Ditch, subsoil, chisel, stubble-mulch, list, furrow, field cultivate, check, bed, with the McCormick combination carrier equipped with tool bar.

International Harvester engineering teamwork produced the new McCormick combination carrier. International Harvester research, engineering and manufacturing men are constantly pooling their time and talent to provide equipment that makes work easier and the farmer's time more productive.



INTERNATIONAL HARVESTER

International Harvester products pay for themselves in use—McCormick Farm Equipment and Farmall Tractors
...Motor Trucks...Crawler Tractors and Power Units...Refrigerators and Freezers—General Office, Chicago 1

HOW THE STARS GOT STARTED...



MARGE and GOWER CHAMPION met as schoolkids at dancing school. Their paths criss-crossed for years as each sought a career. Finally, Gower, back from Service, "teamed up" with Marge. After months of rehearsal, they were a sensation in TV, movies and stage. They are now Mr. and Mrs.



Marge and Gower Champion



"SO MANY OF OUR FRIENDS LIKE **CAMELS** BEST THAT WE TRIED THEM.

CAMELS' MILDNESS AND FLAVOR SUIT US JUST RIGHT! WHY DON'T YOU TRY CAMELS?"

Start smoking Camels yourself!

Smoke only Camels for 30 days and find out why Camels are first in mildness, flavor and popularity! See how much pure pleasure a cigarette can give you!



C for *MILDNESS and FLAVOR*
CAMELS AGREE WITH MORE PEOPLE
 THAN ANY OTHER CIGARETTE!

AGRICULTURAL HALL RECEIVED BY DEPARTMENT
CLEMSON COLLEGE LIBRARY

The Agrarian

OFFICIAL STUDENT PUBLICATION

LEMSON, S. C.

THE CLEMSON A & M COLLEGE

MAY 1954



Clemson's New Agricultural Center

SERVING THE FARMERS
IN NORTH AND SOUTH
CAROLINA SINCE 1906



Planters
Fertilizer & Phosphate Co.

CHARLESTON, S. C.

CHARLOTTE, N. C.

THE AGRARIAN

Volume 13 The Clemson Agricultural College Number 4

Edwin F. Nolley
Co-Editor

Joe W. O'Cain
Associate Editor

James K. Henderson
Co-Editor

John M. Turner
Advertising Manager

Jackie Sanders
Business Manager

Alva L. McCaskill
Circulation Manager

Jerry Hammett -- Feature Editor

Ray M. Buck ----- Dept. Editor

Douglas Owens ---- News Editor

Departmental Writers—

William C. Dailey, W. D. Barton, E. M. Rast, Bill Pressley, William E. Byrd, Gene Norris, Derrick Blocker, Claude L. Mullwee, Jimmy Young, J. David Martin, Tommy Eleazer, Jack D. Edwards, and N. C. Clark, Jr.

Advertising Staff—

Wilson K. Kaiser, Thomas E. Hayden, Baxter M. Hood

Circulation Staff—

Jackie Salters, Charles Johnson.

Advisory Staff—

Prof. Ben. E. Goodale, Prof. T. L. Senn, Ronald North (Student Advisor)

THE COVER

As a further addition to the rapidly changing Clemson campus, the new animal science building, food industry building and greenhouse — the major structures of the new agriculture center at Clemson — are now under construction and are scheduled for completion in early 1955.

IN THIS ISSUE

Agrarian Philosophy	Page 1
Frozen Semen	Page 3
Poisonous Horticultural Plants	Page 4
Feeding Experiments on Fattening Swine	Page 5
Culling and Selection of the Laying Flock	Page 6
Is the Small Farm Doomed?	Page 7
Between the Furrows	Page 9

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

AGRARIAN PHILOSOPHY

By James K. Henderson, Co-Editor

With this issue of the **Agrarian** we, the staff, close another successful year of publication. Next year's **Agrarian** staff will be headed by Niles Clark and Ray Buck, but before placing the reins in their capable hands, there are a few last thoughts to be passed on to our readers.

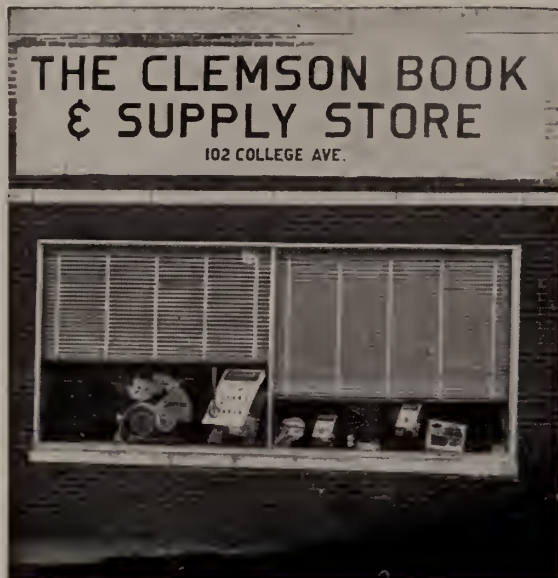
This year we have tried to convey to our readers important developments that have taken place in the field of agriculture. It is not the policy of the **Agrarian** to act as a scientific publication for the School of Agriculture at Clemson, nor is it our policy to publish articles for light reading and amusement. We have strived to strike a happy medium between the two in an effort to please our readers and hope we have succeeded.

Our circulation reached the 4,000 mark this past year, and we are in hopes that next year's number will be increased so that the **Agrarian** may be placed in the hands of every interested reader. We know that under the guidance of the new editors there will be articles and news of interest to all readers, whether students, farmers, or business men.

Last but not least, I would like to say for myself, Ed Nolley, for the staff that publishing the **Agrarian** has been a pleasurable experience. For my own part, I want to thank the members of the staff for their hard work and complete cooperation. It has been wonderful working with you. For myself and the staff I would like to express to the agriculture students and faculty members, whose heretofore unrecognized help has meant so much in making the publication of the **Agrarian** possible, our sincere thanks and appreciation.

* * * *

William Reasonover, Ag Ec '47, former editor of the **Agrarian** who rejuvenated its publication after World War II, has taken a new job in Bennettsville, S. C., as advertising manager of two newspapers — The Marlboro County Herald and Pee Dee Advocate.



Two familiar old faces always welcome
you back to the campus.

CLEMSON BOOK STORE
Official College Book & Supply Store

L. C. MARTIN DRUG COMPANY
Serving Clemson Men Since 1908

W. B. Camp & Sons, Inc.

BAKERSFIELD, CALIFORNIA
and GAFFNEY, SOUTH CAROLINA

Buckfield Plantation

YEMASSEE,
SOUTH CAROLINA

FROZEN SEMEN

B. R. Ebner, Dairy '55

If we look back over the past 12 years, progress in artificial insemination is seen to have been remarkable. In 1940, insemination were carried out using raw semen introduced into the female by means of a speculum and pipette. By this means, possibly 20 insemination per collection could be carried out. With the coming of diluters and the technique of introducing the pipette by controlling the uterus by way of the rectum, it is now possible, but not done, to inseminate up to 1,500 cows from one semen collection.

Within the last few years the introduction of antibiotics and sulphanilamides to the diluted semen has still further raised the conception rate.

In May, 1953 the birth of what is claimed to be the first live calf in America resulting from frozen semen was announced. The birth occurred in Jamesville, Wisconsin. The frozen semen used was frozen under a process developed by a British scientist. Several breed associations and colleges in this country and Canada are now working with this process. The procedure is to use glycerol in the diluter. The semen is then frozen and held at a very low temperature until ready for use. This semen can be held for at least one year without injury to the sperm.

Investigations in England by Parks, Polge, and Smith have revealed promising new developments in methods for freezing and storing bovine semen at -79° centigrade. Breeding experiments have resulted in pregnancies in cattle inseminated with sperm stored as long as one year at -79° centigrade. At the time of publication of this article, calves which appeared to be normal had been produced from frozen semen stored for shorter periods at -79° centigrade.

The important steps in the procedure of freezing at this low tem-

perature are as follows:

- 1) Allow the semen in yolk citrate to cool to 50° centigrade in from four to six hours.

- 2) Add gradually, during the next 30 minutes, an equal volume of citrate buffer containing 20% glycerol.

- 3) Equilibrate the semen and diluent for 12 to 20 hours at 5° centigrade.

- 4) Cool the preparation slowly from 5° centigrade to -15° centigrade at a rate not to exceed two degrees per minute. After this, the freezing can be as rapid as desired.

The technique for freezing semen now being used by the Eastern Iowa Artificial Breeding Association is as follows: The semen, immediately after collection, is diluted one to twenty-five with a homogenized whole milk diluter and allowed to stand in a refrigerator at 5° centigrade for four to six hours. The preparation is then diluted further with an equal amount of milk buffer containing 20% glycerol giving an end product of 10% glycerol and a dilution of one to fifty. Then it is put into ampules and flame sealed, one cc in a two cc ampule. The next step is to place it back into the refrigerator at 5° centigrade and let it stand 18 to 20 hours. It is then placed in an alcohol bath of absolute methyl alcohol and frozen down at the rate of two degrees per minute to -25° centigrade. A very important part of the technique is to lower the semen further down at a rate of three degrees C. per minute to -79° centigrade. This is accomplished by putting dry ice in the alcohol bath containing the ampules and watching closely the drop in temperature with a low temperature alcohol bath at -79° centigrade until used. Just how long the semen may be kept frozen successfully by this technique is not definitely known. So far, semen frozen for sixty-day periods has given just as

good results as that used after being frozen for only three days. Doctor Pirie, who heads the Iowa Association believes that good results may result from semen frozen for nine months or longer.

Experiments on long storage of frozen semen have shown that the temperature of storage, -79° centigrade, is close to the danger line and semen stored above -65° centigrade will not keep for any length of time. This means that storage cabinets have to be developed to hold the semen at a safe temperature.

A cabinet now in use has a capacity of 10,000 one cc ampules of semen. The cabinet has three compartments, two for dry ice and one for the semen. The compartment for the semen is divided into several smaller compartments. The box is insulated with foamica. When the box is in a 35° Fahrenheit room it takes about 125 pounds of dry ice weekly to keep the temperature at -79° centigrade. If the safe temperature is -79° centigrade and the danger temperature in the middle sixties, some other forms of refrigeration besides dry ice must be developed, because the temperature of solid dry ice is exactly -79° centigrade. A change is especially important if semen is stored for a period of several years. There are two possible existing sources of refrigeration: 1) Electrical refrigeration or 2) liquid air as an alternate refrigerant. These sources will also have their problems, but it is believed that they would be better than dry ice.

Work with frozen semen is expected to get under way within two weeks here at the Clemson Artificial Insemination laboratory. Doctor Victor Hurst says that a box is now being completed that will store and freeze the semen. The box will be similar to the one used by the

(continued on page ten)

Poisonous Horticultural Plants

W. F. Craig, Hort. '54

In the field of horticulture much research has been carried on in an attempt to eliminate those plants which are poisonous from the edible plants. Over the past one hundred years a great number of people have been killed due to the lack of knowledge concerning poisonous horticultural crops; however, the recent twenty years of research on the subject has uncovered the greater percentage of those plants unfit for human consumption. Most all horticulturists by profession are versed to the maximum capacity on the subject, but there yet remains that great group of consumers of horticultural crops who are not horticulturists by profession. Therefore, the population as a whole knows very little concerning these poisonous crops. As a source of information, this paper contains many names and families of which there are plants poisonous to humans as well as lower animals. A broader knowledge should prevent some individual from becoming sick as results of eating poisonous plants.

Now look at the relation of plants to public health should be the question in mind. In addition to furnishing food, clothing, and shelter—the basic necessities of life — plants, in their utilization by man, have also furnished problems of public health in their production of alcohol, narcotics, allergies, poisons, and specific human diseases. The three great necessities of life — food, clothing, and shelter — and a host of other useful products are supplied in great part by plants. Plants are important also to man's health in many other ways. Bacteria, viruses, rickettsiae, and fungi cause the majority of human disease.

Altogether the multiple effects of plants on the physical health of man is best illustrated by the water hyacinth. It has been found that water hyacinth grows in such abundance that it causes run-off and increases back water resulting in flood conditions. Moreover, hyacinth has blocked streams carrying sewage with a

subsequent backing of this material into populated areas. As an overall result, this hyacinth has caused a considerable amount of discomfort, and in rare cases death resulted.

There are many plants or plant products which are poisonous directly or indirectly. A majority of materials chewed or smoked have a narcotic effect due to the presence of alkaloids. Tobacco is the least harmful of these substances. However, it is a different matter with coca, cannabis, and opium which are injurious in small amounts and which, when used in quantity may cause stupor, convulsion, and even death.

A centuries old custom of chewing the leaves of the coca plant is carried on in South America by the Indians. The Indians resist physical and mental fatigue and work long periods without food or drink by using coca leaves since cocaine is a derivative of the coca plant. The leaves are chewed habitually by these Indians until physical deterioration and even death.

Onions have a similar effect to that of opium. However onions are a member of the lily family and opium another. Opium is a very old narcotic which has spread to all parts of the world. The immediate effects of smoking opium are pleasurable with dreams of grandeur and disillusionment.

Nearly all plants of history are backed by some legend or fable. Medea, a well known sorceress of mythological fame, appears frequently in the description of poisonous plants. One such plant of late winter and early spring is helleborus niger, the name referring to the black roots. Helleborus known as Christmas rose, or Lenten rose, is a very old plant. As the beautiful white flowered variety blooms, or is supposed to bloom at Christmas time, it has been symbolic of that season and has been called the birthday flower of Christ. In spite of the loveliness and purity of this Lenten rose, the roots were called the "bread of death" by people of olden times.

During the month of May when gathering a bunch of lily-of-the-valley, little do we think of other parts except the flower. The great root systems and berries that follow the pure white buds of the lily-of-the-valley are deadly poisonous.

Most all horticulturists know the great numbers of vegetables containing poisonous elements. Especially well known is hydrocyanic acid in plums, cherries, and certain peaches and genus prunus. This chemical compound is found in a locked up condition and needs an enzyme or ferment to unlock the compound. There are the members of the mustard family which are poisonous vegetables. The mustard oils are very strong irritants, and feeding on considerable ground seeds may cause chronic enteritis, and abortion.

As mentioned before there are members of the rose family which are definitely poisonous at times along the shores of New England at hay harvest. The variety is known as the "brake fern." Certain varieties of lilies are poisonous and children have at times been stricken from eating bulbs. Another poisonous plant is a member of the iris family called "Wild Iris" or "Blue Flag." It was found in habitat in meadows in eastern North America, a substance which act upon the gastro-intestinal tract. Orchids are poisonous. Showy-lady-slipper has definitely been found to be poisonous — located in bogs and swampy places in eastern North America, the poison has been found to be a fatty acid. Osage-orange, a member of the mulberry family contains toxic substances to the human. It is a native from Arkansas to Texas, and the osage-orange is largely planted for hedgerows in the north eastern states where it has become established. Results of its toxicity are skin diseases or dermatitis. In recent years beans of the modern varieties have produced considerable stomach trouble. However, "Wild Beans", "Blue Peas", "Indian Beans", and the sort are poisonous. Also Holly varieties (continued on page twelve)

Feeding Experiments on Fattening Swine

By N. C. Clark, Jr., AH

In their quest to produce a better product for less money, the Clemson Animal Husbandry Department has recently completed a three year feeding test on fattening hogs. These tests were conducted to compare (1) Animal and vegetable protein supplements; (2) Feeding values of low-gossypol cottonseed meals prepared by different methods; (3) Feeding values of cottonseed meal and soybean meal, and (4) The effect on the rate and economy of swine gains when supplements supplying Vitamin B₁₂ and antibiotics were added to supplements containing low-gossypol meal. Untreated cottonseed meal contains a high level of free gossypol which is toxic when consumed in large amounts by swine.

Eighty-five pigs, averaging eighty pounds in weight, were fed until a final weight of 200 pounds was reached. Purebreds of the following breeds were used: Poland-China, Duroc-Jersey, Hampshire and Beltsville No. 1.

The pigs were self-fed, in individual pens, a carbonaceous base ration of yellow corn in amounts sufficient to balance their rations according to Morrison's feeding standards. Also included in the base ration was one percent oyster-shell flour and one-half of one percent salt.

Pigs fed a check supplement consisting of 50 percent Menhaden fish-meal, 25 percent alfalfa meal and 25 percent cottonseed meal made daily gains of 1.96 pounds during the feeding period. Feed consumed per pound of gain was 3.75 pounds. The cost per hundred pounds of gain attributed to feed was \$14.20.

Lot 2 pigs, which were fed a supplement of 25 percent alfalfa meal and 75 percent low-gossypol cottonseed meal (low temperature processed), made daily gains of 1.56 pounds and consumed 4.17 pounds of feed per pound of gain. Feed cost per hundred pounds of gain in this lot amounted to \$14.60. The low-temperature cottonseed meal used in this lot was obtained from the Southern Regional Laboratory at New Or-



Can feed costs, which form a major proportion of production expenses, be reduced through the use of new feed mixtures?

leans and was a low-gossypol product prepared in an expeller-type mill at a temperature of approximately 210° Fahrenheit.

Lot 3 pigs were fed a supplement consisting of 25 percent alfalfa meal and 75 percent low-gossypol cottonseed meal (solvent extracted). This cottonseed meal was obtained from the Augusta Plant of the Buckeye Cottonseed Oil Company. Pigs of this lot made a daily gain of 1.71 pounds and required 3.92 pounds of feed per pound of gain. Feed cost per hundred pounds of gain was \$13.72.

Lot 4 pigs were fed a supplement of 25 percent alfalfa meal and 75 percent soybean oil meal. They made daily gains of 1.69 pounds and required 3.91 pounds of feed per pound of gain. The feed cost in this lot was \$13.69 per hundred pounds of gain.

Lot 5 pigs were fed a supplement consisting of the same ingredients as that of Lot 2 plus **Aurofac**, a commercial antibiotic concentrate put out by the Lederle Company. **Aurofac** contains 1.8 grams of aureomycin and 1.8 milligrams of Vitamin B₁₂ per pound. This antibiotic was mixed with the feed at the rate of 10 pounds of **Aurofac** per ton of feed and resulted in each pound of feed containing 9 micrograms of Vitamin

B₁₂ and 9 milligrams of aureomycin. The pigs fed this supplement made daily gains of 1.82 pounds and required 3.74 pounds of feed per pound of gain. The feed cost per hundred pounds of gain was \$14.02.

Lot 6 pigs were fed a supplement consisting of the same ingredients as those fed in Lot 2 plus **MK 45**, a commercial antibiotic concentrate put out by the Merck Company. **MK 45** contains 15 grams of penicillin and 12.5 milligrams of Vitamin B₁₂ per pound and was mixed with the feed at the rate of 1.44 pounds per ton of feed. This resulted in each pound of feed containing 9 micrograms of Vitamin B₁₂ and 10.8 milligrams of aureomycin. Pigs on this supplement made daily gains of 1.96 pounds and required 3.47 pounds of feed per pound of gain. Feed cost was \$13.01.

As can be seen, the hogs fed the check ration made faster gains than those receiving either of the vegetable supplements without antibiotics and Vitamin B₁₂. Also, the check lot hogs ate less feed per pound of gain than those receiving the unaugmented vegetable protein. Adding Vitamin B₁₂ and aureomycin or penicillin to the cottonseed meal ration resulted in a significant increase

(continued on page sixteen)

Culling and Selection of the Laying Flock

Heber N. Padget, Poultry '54

Culling out the non-producers is one of the most effective ways of increasing the profits of a poultry flock. Culling of poultry of all ages, to a limited extent, should be a continuous process because diseased, crippled or otherwise defective birds should be removed from the flock as they are detected. This reduces feed costs by eliminating birds that have ceased to lay. In addition to this it gives the remaining birds in the flock a better opportunity by allowing more room.

One of the best times to select layers for a flock is when the pullets are from four to six months old. If they are in a thrifty condition at this time, it is not hard to select the best potential layers. The desirable pullets will be well-developed with bright combs. The undesirable birds will lack body and comb development. When the flock is in the flush of laying — in other words, when about all are at work, any culls or non-layers can be spotted readily.

To determine whether a hen is laying or not is based on several factors: (1) The comb and wattles — The comb and wattles of a laying bird are generally red and waxy, especially if the bird has been in production only a short time. If the comb is shriveled, hard, dry, and covered with loose, grayish scales, one can be fairly sure that the bird has ceased to lay. (2) The eye. The laying bird will more frequently have a bright, sparkling eye than will the hen not laying, although many poor birds have fairly bright eyes when they are in good physical condition. The bird is usually in poorer physical condition just after production ceases than at any other time of the year and hence at this time the usual brightness of the eye is often lacking.

(3) The face. The face of a laying hen will be free from excess fat and generally will be bright red in color. A bird that has laid intensively, especially undersized birds, may have pale faces. A hen not laying that has been out of production for some time will have a tendency toward a



Proper culling of hens can mean the difference between profit and loss in the poultry business.

fatty face, especially in the heavier breeds.

(4) The vent. The vent of a bird in dormant condition will usually be contracted, small in size, round in shape, and yellow in color. The yellow color of course will be found on the yellow skinned breeds only. The amount of color will depend also upon the amount of yellow corn and green feed that the flock is receiving. On the other hand the vent of a hen laying heavily will be dilated, crescent in shape and bluish in color.

(5) The skin. The skin over the abdomen of a bird not laying will be tight and rigid with layers of fat underneath, whereas in a laying hen the skin will be soft, loose, and pli-

able. Also the abdomen will be expanded in the laying hen due to the slightly enlarged intestines and the greatly enlarged oviduct. In a bird not laying this expansion is not evident except in rare cases where internal tumors or heavy accumulation of hard body fat are present.

(6) The pubic bones. The pubic bones may be close together and the distance between the pubic bones and rear end of the keel bone may be very small in case of birds out of production. These two measurements will depend to a large extent on how long the bird has been out of production. In a laying hen these bones will, as a rule, spread apart and be-

(continued on page twelve)

Is The Small Farm Doomed?

By Edwin E. Sompayrac

In this paper I will not say that the small farm is doomed. Neither will I say that there will always be small farms. But, I will say that we do have them now and will continue to have them in the immediate future.

Farming has long been considered a family-sized operation. In agriculture, at least three-fourths of the farms can be classified as family farms. We have one farm, as classified in the census, for every 38 persons in the country.*

Before I go further, let me say that, in my estimation, there are two distinct types of small farms. First, the small farm suits some people who are near retirement age and want to take life easy, or who may not need high farm earnings, or who would rather take a lower but more stable earning, with more time for living. Second, there is a small farm that is operated by the incapable, uneducated manager. The use of inefficient and outmoded methods of farming and the lack of necessary financial resources, or the local scarcity of other work that the operator can do are all direct reasons why it is a small farm. Generally these farms are most numerous in thickly populated rural areas where technological changes in farming have been slow and alternative employment opportunities limited. As a result of these, their contribution to agricultural or other economic production is much reduced. These farms are gradually decreasing. In a study made at Michigan State College in 1949, to find which size farms are increasing and which are decreasing, the following results were recorded:*

Farms under ten acres in size decreased 6 percent in number.

Farms fifty to ninety-nine acres in size decreased 14 percent in number.

Farms 180 to 259 acres in size increased 10 percent in number.

Farms 260 to 379 acres in size increased 16 percent in number.

Farms 380 to 499 acres in size increased 15 percent in number.

Farms over 500 acres in size increased 23 percent in number.

We might ask what is causing this decrease in number of small farms. About half of the decline in number of farms was due to combining farms, made possible by mechanization and modern technology, and to discontinue food production on many small units which are now classed as rural residents and not farms. Also, there has been a change in the definition of a farm which tended to eliminate some farms.

What can we do about this decline in small farms? The question may be raised — Are the technologists and researchers doing as much for the small farm as they are for the large ones? I believe they should lay more stress on some of the newer developments in farming which the small farmer can take advantage of at low cost or which would reduce his costs. Instead of purchasing the large machinery, perhaps he can hire the job done, or buy the smaller, less expensive machinery, which is best suited for his acreage. Perhaps the small dairyman can cut costs by using artificial insemination, and raising only his best heifers. Maybe some labor-saving techniques and thriftiness and other ways would make the work easier and increase net returns. Also farmers on small acreages could do a better job

of the selection of plant varieties, disease control, and the like.

It has been well established that the size of the farm business is an important factor in determining farm profits. With the exception of years when prices were unusually low (earnings on large farms fluctuate more widely than on small farms), farm business reports have implicated that the large farm business makes higher average labor income than do small farm businesses.*

Still the question "Is the Small Farm Doomed?", has not been answered. By analyzing the facts, I am sure of one conclusion—the number of small farms may be decreasing, this decrease is caused mainly by the before-named reasons, but the ones remaining are mostly farmers who are experienced and have the "know how", or they may be the small farms who are operated by the minority, but still important, retired or "satisfied" operators. There will always be these farms. The small farm that is operated by the inexperienced, uneducated operator can't make much money because of its pattern of operation and if something comes along better — which usually is almost anything — he will quit farming. I believe that these types of farms are doomed.

Farm production over the years has been steadily increasing — since World War I, it has increased 40 percent—and the prices received by the farmers have increased. With technological improvements and mechanization setting a fast pace, the small farm operators will have to acquire the knowledge of successful operation to keep up with the large farms. Those who are lucky will survive, those who aren't—are doomed.

U. S. Agricultural Technological Bulletin 1019. "Size of Farms in U. S." page 3.
Farm Economics Bulletin 31 "Should All Farms Be Large" Pt. 2 P. 592-595 F 49.

The Agricultural Situation, Volume 36 No. 3
"A Better Picture of our Small-Scale Farms." pp. 5-6.



QUEEN-SIZE
Six-foot
MODEL 66



Now! TWO Great New **ALL-CROP** Harvesters

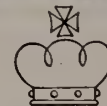
"Be master of your harvest — not its slave."

That slogan made history in 1935, the year the first ALL-CROP Harvester was introduced as the "successor to the binder."

Through the years that followed, the low-cost ALL-CROP helped thousands of farmers and their families to a better way of life. It enabled them to harvest their own crops without expensive hired help, and to keep in their pockets a larger share of the money they received from the sale of grain and seed.

The ALL-CROP introduced many successful new principles and advantages that enabled farmers to harvest their crops more efficiently . . . at lower cost; to save more grain and clean it better. To its credit is a long string of "firsts."

It was the first harvester to be equipped with air-tired wheels for faster and easier operation in the field; first to be adapted for power take-off; first to employ the principle of wide-flow feeding and thresh-



KING-SIZE
9 ft. or 12 ft. Model 100
SELF-PROPELLED

**powered by the dynamic new WD-45
POWER-CRATER engine**

ing with its 5-foot spiraled bar-type cylinder; first to use patented rubber shelling contacts on cylinder and concaves; first to introduce the quick cylinder speed-changer; first to introduce air-blast separation and cleaning; first to use silent, variable-speed V-belt drives.

Now Allis-Chalmers introduces two new, larger capacity ALL-CROP Harvesters — the pull-type 6-foot Model 66, and the self-propelled 9- and 12-foot Model 100. Both have all of the superior features and principles that made the ALL-CROP famous, and both are priced for home ownership.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

for More Acres.. More Crops.. More Profit

ALL-CROP and POWER-CRATER are Allis-Chalmers trademarks.

BETWEEN THE FURROWS

ALPHA ZETA INSTALLS NEW OFFICERS AND SELECTS DELEGATES TO NATIONAL CONCLAVE

At a recent meeting of the South Carolina Chapter of Alpha Zeta, honorary agricultural fraternity, installation of officers for the coming year was made.

James K. Henderson, Dairy senior of Clemson was installed as the new Chancellor, Robert J. Donaldson, Horticulture senior of Mt. Pleasant, S. C., was installed as the new censor.

Other officers installed are as follows: Niles C. Clark, Jr., rising senior in Animal Husbandry—Scribe; Ray M. Buck, Jr., rising junior in Animal Husbandry—Treasurer; and Bryan L. Walpole, Agronomy senior—Chronicler.

Faculty Advisors reelected were Dr. C. M. Jones, Professor A. W. Snell, and Professor T. L. Senn. Professor A. W. Snell was named chairman of the Faculty Advisory Committee.

Delegates to the National Conclave which is to be held in Detroit, Michigan, September 8-10, were selected. W. E. Smith, II, Ag. Engineering rising junior was named delegate. The alternate delegate selected is Clyde E. Woodall, rising junior in V.A.E.

DAIRY CLUB

The members of the Clemson Dairy Club elected officers for the 1954-55 school year at the regular meeting held April 27, 1954.

At this meeting Rawl Culclasure was elected president of the Dairy Club. Rawl, a rising senior from St. Matthews, is majoring in dairying. Chauncey Smith, also a rising senior, was elected vice president. Chauncey is a dairy major from Spartanburg. William Bailes was elected secretary-treasurer. William, a rising junior from Union, is majoring in dairying. Charles Maloney was appointed by Chauncey Smith, vice president, to assist Chauncey in serving refreshments at regular meetings. Charles is a rising senior from Adel, Georgia. The faculty advisor for the Dairy Club will be elected at the first regular meeting in the fall.

The Dairy Club plans to end its meetings this year with a picnic on May 25. The picnic will be at Boscobel. A number of the members are working on an entertainment program for the occasion.

G. H. BAKER APPOINTED DISTRICT 4-H CLUB AGENT

George Homer Baker, who for the past four years has been assistant county agent in Sumter county, has been appointed district 4-H club agent for the Clemson Extension Service effective May 1. He will serve also as director of Camp Bob Cooper, one of the state's 4-H club camps. Mr. Baker succeeds J. T. Rogers, who is now Florence county agent.

Mr. Baker is a native of Williamsburg county and is well qualified to serve on the state 4-H club staff. For five years he was an outstanding 4-H club member and excelled in crops and livestock projects. He held all offices, including president, in his local club and was an officer of his county 4-H council.

He entered Clemson in 1942, but his college career was interrupted by three years' military service. Following this service, he re-enrolled at Clemson and was graduated in January 1950 with a degree in agronomy.

"Because of his sincere interest in working with youth, his experiences as a 4-H club member, and his 4-H leadership as assistant county agent, we are fortunate to have Mr. Baker join the state 4-H club staff," says L. O. Clayton, state boys' 4-H club agent.

BLOCK & BRIDLE CLUB ELECTS OFFICERS

At the May 11 meeting of the Block & Bridle Club, Niles C. Clark, Jr., of Waterloo, S. C., a rising senior in Animal Husbandry, was elected President of the Clemson Chapter.

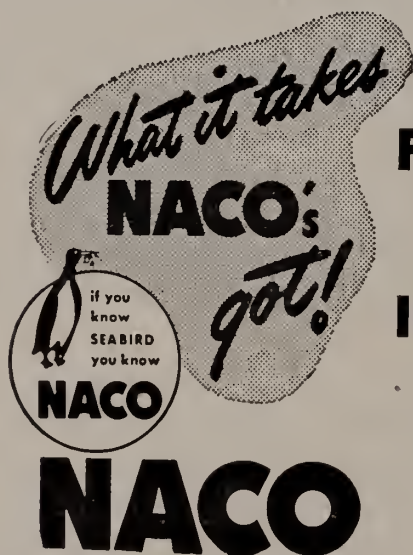
Other officers include: Arthur G. Neil, Jr., of Waterloo, S. C., a rising senior in Animal Husbandry—Vice President; James C. Rogers, a junior in V.A.E. from Pelzer, S. C.—Secretary; Thomas E. Hayden of North, S. C., a rising junior in Animal Husbandry—Treasurer; Frederick J. Rivers of Chesterfield, S. C., a rising senior in Animal Husbandry—Sgt.-at-Arms.

Dr. R. F. Wheeler and Dr. W. C. Godley, both professors in the Animal Husbandry Department, were chosen for Faculty Advisors for the coming year.

Plans were discussed for the annual banquet which is to be held at the Clemson House on May 25.

**Pendleton Fertilizer
Issaqueena Feed
Cottonseed Products
Certified Cottonseed
Insecticides**

**PENDLETON OIL MILL
PENDLETON, SOUTH CAROLINA**



FERTILIZERS

that build
better crops

INSECTICIDES

that assure
crop protection

**CHARLESTON
and
SPARTANBURG**

FROZEN SEMEN

(continued from page three)

workers in Canada. The box will be some fifteen inches wide, fifteen inches long, and thirty inches deep. It will have about eight inches of insulation. The box will contain three drawers which will have racks in them to hold the ampules of semen. The ampules will be placed in an alcohol bath. The purpose of this bath will be to keep the semen at a constant temperature. This is very important. Doctor Hurst explained that they will use dry ice to freeze and store the semen. This will keep the semen at -79° Centigrade. The system used for diluting and freez-

ing the semen will be the same as that used by British researchers. Doctor Hurst stated that he expects to have inseminated several cows with the frozen semen by the end of this summer or before. The problem of shipping the semen to the inseminator and storing it after it has arrived will have to be solved before it can be used in the South Carolina County breeding program.

At the present time, The Ontario Veterinary College of Canada is shipping frozen semen from Canada to England. The semen, which is enough for three hundred services, is packed in dry ice which keeps the semen at -79° centigrade. The box

used for shipping is insulated with a special foam plastic that has a high insulating value. The semen is shipped by air.

Advantages of frozen semen are:

- 1) Fewer bulls will be needed.
- 2) Banks of frozen semen can be built up in the less active seasons and retained in storage for use in rush periods.
- 3) The number of offspring per bull can be greatly increased. It has been estimated that one bull could sire over 100,000 offspring.
- 4) A wider selection of bulls, because the semen can be kept until needed and used with less waste to take care of more cows.
- 5) Semen can be shipped long distances and less often, with better chances of its being fertile when it arrives.

6) Instead of flying or mailing semen to inseminators three times per week or every day, it could be shipped once a week or possibly one day each month.

7) Semen could be stored from young bulls which are being used just heavily enough to prove them. When the proof was in, you would have a bank of semen from those bulls that transmitted high production.

8) The surplus semen from good bulls could be saved until there is a need for it.

9) A purebred breeder could set up a long-time breeding program, using his own select bulls — whose semen would be kept in banks to use when needed.

10) Service of aged bulls can be extended for many weeks or perhaps even months after he is dead.

11) Improved efficiency in management of the bull stud.

The disadvantages of frozen semen are:

- 1) Expensive freezing equipment.
 - 2) Higher cost for services.
- It is believed that for the time being the technique of using frozen semen will be used for these three purposes—

- 1) Providing nominated services.
- 2) For the convenient distribution of minority breed semen.
- 3) For the export of semen abroad.

It is possible that by the time frozen semen comes into great use, most or all of the disadvantages and problems can be ironed out.

insects

YOU SHOULD KNOW

*How To Identify
These Crop Destroyers*



BOLLWORM

Heliothis armigera (Hbn.)

A major cotton pest, the newly hatched bollworm feeds on leaves and then attacks squares and bolls. Greatest loss is caused by tunneling into and destroying bolls. Color varies from pink, green, to almost black. The full-grown worm is about 1½ inches long. The female lays about 1,000 eggs, particularly on growing tips, squares and bolls.



POTATO LEAFHOPPER

Empoasca fabae (Harr.)

This leafhopper is one of the alfalfa producer's greatest enemies because all stages of the pest suck juices from alfalfa plants, stunting growth and reducing yield. They are also the cause of "hopper burn" on potatoes. A tiny, pale-greenish insect, this leafhopper is not found in Northern states during winter, probably flying in from the South, where they breed during the entire year.



ARMYWORMS

Pseudaletia unipuncta (Haw.)
and *Laphygma frugiperda* (A. & S.)

Armyworms are a major pest of cereal and forage crops, their damage sometimes totaling millions of dollars. Armyworm invasions commonly follow cold, wet springs. The tiny, newly hatched caterpillars feed near the ground. Fully grown, they have enormous appetites, the noise of their feeding making a rustling sound in the fields.

toxaphene

DUSTS • SPRAYS

*For full-color booklets showing
these and other insects write to Hercules*



CONTINENTAL GRAIN CO.

ANDERSON & EASLEY, S. C.

Buyers of All Farm Grains

Manufacturers of
Arrow and Sunny South Feeds
for
LIVESTOCK and POULTRY

ETIWAN FERTILIZER COMPANY

CHARLESTON, SOUTH CAROLINA

INDEPENDENT — PROMPT — RELIABLE

Manufacturers Of
DEPENDABLE FERTILIZER SINCE 1868

POISONOUS PLANTS

(continued from page four)

are poisonous. Gray winterberry, or Black-alder are native to swamps in eastern North America.

Another poisonous plant is the prickly poppy. These prickly poppies occur as single plants or in large groups anywhere in the state of Florida. It has been a hazard to livestock farming; moreover, mechanical injury occurs frequently from the prickly fruit. Boxwood, a much

used plant in ornamental horticulture and landscape gardening, is definitely poisonous. All parts of the plant are considered toxic, and small amounts of the plant have an emetic or purgative action; large amounts induce abdominal pain resulting in convulsions followed by death. The hydrangea plant which is grown by many amateur propagators is toxic to humans. Glucosides which yield hydrocyanic acids have been found in abundance in the tissues of the

plants. Sometimes people have been poisoned by cherries of the wild varieties; however, the cases of poisoning have been quite infrequent. On the other hand, the toxicity is found in the leaves and branches and occasionally some of the sap is acquired from the leaves or displaced onto the berries. The members of the cherry family toxic to man are black cherries, wild cherries, wild black cherries, and Rum Cherries. Easter lillies are toxic to humans, much to surprise. Nearly all people buy this ornamental plant during the Easter season, but few have knowledge of its toxicity. The bulb is the poisonous portion of the plant, and it has an extremely acrid taste. Another point which is sufficient to the wise, there is no definite treatment or antidote for poisoning from this plant.

POULTRY CULLING

(continued from page six)

come somewhat flexible on the end, whereas in a bird not laying they are more likely to be close together, stiff, and sharply pointed or else covered with layers of fat, causing them to feel blunt and hard. The pubic bones of the heavy breeds are naturally larger and more blunt than the bones of the light breeds, this especially being true of the meat varieties.

It is not a matter of breed as to whether a hen is a good layer or not. The matter of type, capacity, and constitutional vigor enters into the picture. Most breeds have a type of hen which converts most of the feed she consumes over body maintenance to the production of eggs. This we call the "typical egg type." Second, there is a type hen which converts a high proportion consumed over maintenance for the production of eggs, the balance going to make flesh. This is called the "dual-purpose type", as this hen performs two functions that are considered necessary in the economy of Nature: the production of eggs and the production of meat on a commercial scale. Third, there is a type where practically all the feed consumed over bodily maintenance goes to make flesh. This hen we call the "meat type", for the reason that

(continued on page fourteen)



Spring is for...the Young in Heart

Spring is for turning the soil, for putting seeds into the ground. Spring is for setting to action the plans made when snow covered the fields.

Spring is for youth—and for all who are young in heart. Give them high purposes and good tools with which to work, and young and old alike will do a good job.

Such philosophy applies to farming, particularly soil conservation farming. Many an experienced, successful farmer has changed to soil-conserving methods—and been even more successful. The

Give a youngster high purposes and good tools to work with — and you've started him on the road to success.

young farmer—on the other hand—simply *begins* farming the conservation way, because he wants his land to be good while he's farming it—and good enough to be worth leaving for someone else when he's ready to quit farming.

All of us, working together, can make a lot of soil conservation progress with young farmers—if we teach them young and teach them well.

J O H N D E E R E • M O L I N E • I L L .

Your Trade Marks for Quality Seed



Producers
and
Distributors of
**SOUTHERN
FIELD
SEED**



Exclusive Producers of
TABLE JOY Hybrid Sweet Corn
"All McNair's Seed Are Grown on McNair's Farms"
McNAIR'S YIELD-TESTED SEED CO.
LAURINBURG, N. C. Phone 388 or 502

POULTRY CULLING

(continued from page twelve)

practically all her energy is used in producing meat.

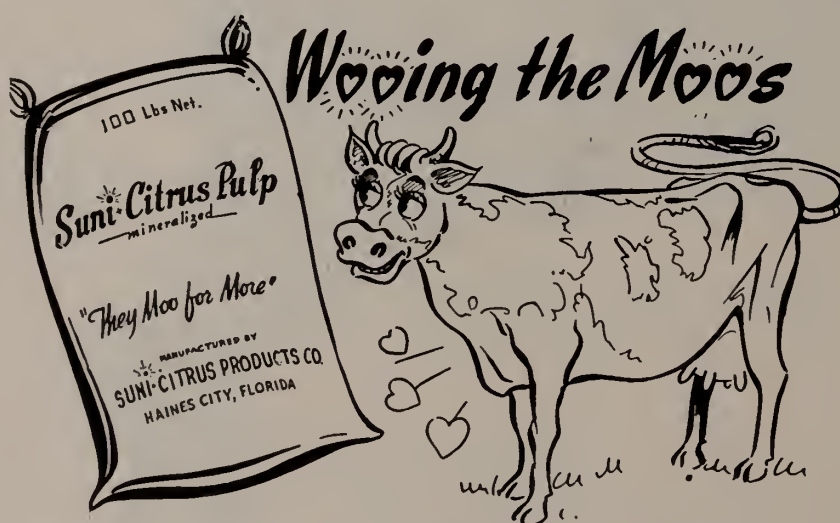
The poultry flock if it could be caught as easily as a cow or horse would be culled more often than it is now. A flock can be caught with the least disturbance by the use of catching crates. Time and material spent in the building of catching crates are paid for many times during the year.

There is one right and there are several wrong ways of removing a bird from the catching crate and holding her for inspection. When removing from the catching crate one or both wings may be grasped close to the body and the bird lifted quickly from the crate. When removed in this manner there is less possibility of fluttering and the bird getting away. If the bird is grasped by one or both legs and pulled out feet first, the wings spread and are prone to catch on the crate. A bird is more subdued and helpless without the use of the wings than it is without the use of the legs.

In culling, the birds with the scaly comb, dry, yellowish colored vent, and tucked-up abdomen should be culled. Birds in the late summer months that have ceased to lay as indicated by these characters will not, as a rule, come back into production for several months. Occasionally birds that have been mismanaged will, when placed under favorable environmental conditions, come back into production. However, it rarely pays to retain non-laying birds at any time of the year, especially when they are to be sold later. Any profit made on hens kept beyond the first laying year may easily be lost in the lower meat value obtained when the birds are finally disposed of as cull hens. The same policy applies equally well to disposing of broody hens that are slow coming back into production.

The characters outlined above indicate whether a bird is laying or not at the particular time the culling work is being done. Only to a small degree will they indicate how long the bird has been in or out of production. In looking over a flock of birds in the late summer or fall, par-

(continued on page sixteen)




Cows Love Suni-Citrus Pulp

Suni-Citrus is rich in milk-making units, brimming with bovine health and happiness. That's why—

"They Moo For More"

Suni-Citrus Products Co
HAINES CITY, FLORIDA

Sales Agent: ASHCRAFT-WILKINSON COMPANY, ATLANTA, GEORGIA



ЭТО ПОСЛЕДНЯЯ КАПЛЯ!

they just
can't seem to collectivize
hands that touch the soil

Behind the iron curtain today a lot of commissars are saying, "ЭТО ПОСЛЕДНЯЯ КАПЛЯ!" We would say, "That's the last straw!"

You see, it has been the commissar's job to "collectivize" the farmers . . . to put the state between the man and the land. But, reports tell us, the collectivizing job is going badly. The muzhiks (little farmers) and the kulaks (big farmers) are just not falling in line.

Even in curtain countries, folks who live by the land have inherited the freedom of the soil. The knowledge that a man should be free to make his own decisions seems to rise from the furrows to make its indelible mark.

Throughout history, serfdom has never produced good farmers. That's easy enough to understand . . .

Can you imagine a farmer who no longer makes his own decisions letting the moist, spring-warmed earth fall through his fingers? Can you picture a state-controlled farmer rubbing out kernels of wheat in the palm of his hand . . . blowing away the chaff and sampling the grain? Can you see a party farmer terracing his land, seeding waterways, or walking through the "south 40" with his sons? Can you picture such a farmer buying Modern Machines to boost his production and better his lot, or a farm-equipment dealer playing a prominent part in community affairs, taking a real interest in modern agriculture?

Hardly!

It takes free men to work the soil!

MANUFACTURERS OF MM VISIONLINED TRACTORS, THE UNI-FARMOR, MODERN MACHINERY FOR THE FARM




MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA

Irrigation
AS
Crop Protection
Domestic Water Systems
Disston Saw-log
AND
Pulpwood Chain Saws
COLUMBIA SUPPLY CO.
Phones LD-64 Local 5121
COLUMBIA, SOUTH CAROLINA

"One of the best in the South. . . ultra-modern. . .", says 



Clemson
House



In the foothills of the beautiful Blue Ridge Mountains, you'll find the Clemson House located in a unique setting - right on the campus at Clemson College. Here you will find all of the services at a great metropolitan hotel yet you will be far away from the noise of a large city. And you'll enjoy the beautifully landscaped grounds and the flower beds. The splendid accommodations and the excellent cuisine offered at the Clemson House are combined with warm, friendly hospitality and fine service. The Clemson House is a gem among fine hotels and the rates are almost unbelievably low. All public rooms are air conditioned. Four dining rooms and the Tiger Lounge and Coffee Shop. There is swimming, fishing and golf nearby.

Fred L. Zink, Jr., Manager

On East Edge of Clemson, S. C. On U.S. 78, 123 & State 28

POULTRY CULLING

(continued from page fourteen)

Particular notice should be taken to those birds having deep yellow shanks and beaks. During the summer months birds that are deeply colored with yellow pigment in the vent, beak, and shanks should be culled. Sometimes the comb may be well expanded and red in color. These birds as a rule are individuals

that have broken down in the reproductive organs or are taking on male characteristics. Save those birds that are well bleached in the beak and shanks and are also in good physical condition. This is a good indication of long, continuous production, and sustained vigor.

All birds regardless of their skin color lose their plumage and grow a new coat of feathers annually. Dur-

ing the summer and early fall months cull out the hen that sheds her body, tail, and wing feathers. She is an unprofitable bird to keep in the laying flock. Occasionally a good bird will lose a few feathers from time to time, especially on the neck and in the wing, and still continue in production, but birds that molt out their body plumage and tail feathers as well as their wing feathers usually quit laying about the time or just prior to the time they begin to molt. This matter of production as indicated by the molt can always be checked by means of those characters indicating laying conditions. Early molters are unprofitable birds because the time required for the renewal of the plumage is much longer than it is with the late molters. Hence their laying period is cut short. A bird usually can be quickly and easily classified by the molt when she is either a very high or a very low producer. The bird that is on the border line may require a close examination before a correct decision can be made. Poor management such as a radical change of feed or infestation of external parasites will often force good hens to molt their plumage prematurely. If noticed in time and the cause removed, these birds can be checked in their molt and brought back into laying.

FATTENING SWINE

(continued from page five)

in the rate of gain and a significant decrease in the feed consumed for a pound of gain. There was no great difference in the rate of gain or feed per pound of gain for the penicillin—or aureomycin-augmented supplements.

The pigs used in this experiment were slaughtered and measurements were made of the back fat thickness, cut-out percentage and the specific gravity of the carcasses of the different lots. Carcass data were taken to determine whether the different feeds caused a significant variation in the proportion of fat to lean meat. These data are still being analyzed and are not available for release at this time.

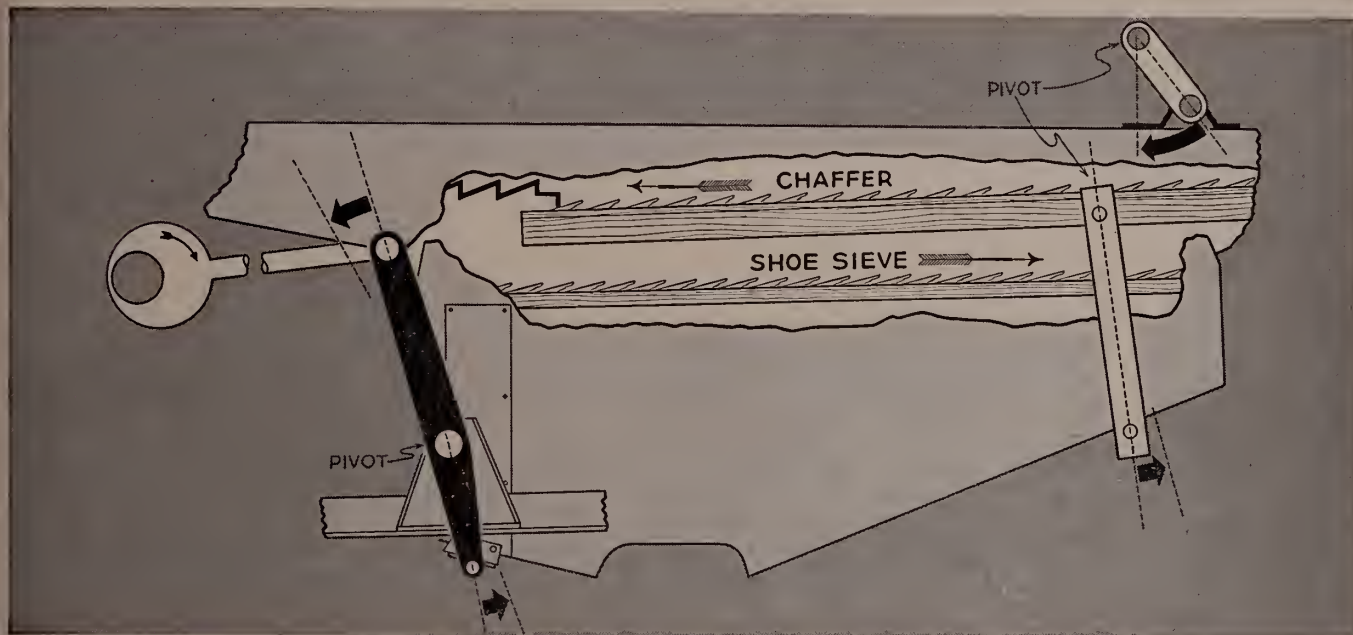
Information obtained through the courtesy of E. G. Godbey and L. V. Starkey, Clemson College Animal Husbandry Department.

A report to you about men and machines that help maintain International Harvester leadership

**Exclusive opposed-action shoe prevents
straw-blocked sieves in the**

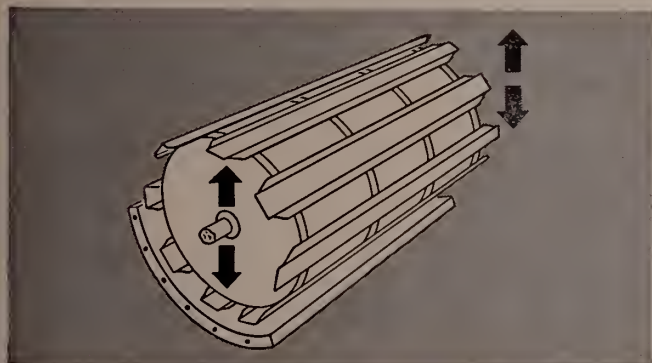
NEW McCormick® 141 HARVESTER-THRESHER

Over 35 new grain saving features include 60 hp engine, complete redesign to save more of the last 10% of the crop.



In the IH opposed-action shoe, the chaffer goes forward when the shoe sieve moves backward. This eliminates any tendency for the straw parti-

cles to bridge and lodge between shoe and sieve. The shoe's full area is always clear to thoroughly clean heaviest yields.



Exclusive *Rigid-Mounted Concave* with quick, two-point cylinder adjustment gives uniform, accurately-held clearance from front to rear and end to end. More efficient threshing and separation at the concave is the result.

OTHER MAJOR IMPROVEMENTS

of the McCormick 141 include:

- redesign of cutting mechanism for more positive feeding of straw
- quick, easy adjustment of cylinder speed and cleaning air blast to meet changing conditions
- improved visibility with faster, easier control for greater operator comfort

IH engineering teamwork produced the added grain-saving features of the new McCormick No. 141 harvester-thresher. IH research, engineering and manufacturing men are constantly pooling their time and talent to solve farm problems—to provide equipment that makes farm work easier and the farmer's time more productive!



INTERNATIONAL HARVESTER

International Harvester products pay for themselves in use—McCormick Farm Equipment and Formall Tractors... Motor Trucks... Crawler Tractors and Power Units... Refrigerators and Freezers—General Office, Chicago 1, Illinois

How the stars got started.....



William Holden says:

"My Dad, a chemist, wanted me to follow in the business. But I got the play-acting bug in school and college. I was in a small part at the Pasadena Playhouse when they picked me to test for 'Golden Boy'. I never worked so hard in my life! But the success of the picture made it worth it!"

"I'M FOR **CAMELS**!
I'VE FOUND THEY
GIVE ME EVERYTHING
I LIKE IN A CIGARETTE
—GENUINE MILDNESS,
REAL FLAVOR. YOU'LL
LIKE CAMELS, TOO!"

William Holden

Star of "The Bridges at Toko-Ri"



CAMELS LEAD in sales
by record

Newest published figures*, by the leading industry analysts, Harry M. Wooten, show Camels now 50 8/10% ahead of the second-place brand — biggest preference lead in history!

50 8/10 %

Start smoking Camels
yourself!

Make the 30-day Camel Mildness Test. Smoke only Camels for 30 days — see for yourself why Camels' cool mildness and rich flavor agree with more people than any other cigarette!



R. J. Reynolds
Tobacco Co.,
Winston-Salem, N. C.

CAMELS *for Mildness and Flavor*
AGREE WITH MORE PEOPLE **THAN ANY OTHER CIGARETTE!**

AGRICULTURAL REFERENCE DEPARTMENT
CLEMSON COLLEGE LIBRARY

The Agriarian

OFFICIAL STUDENT PUBLICATION

CLERMONT, S. C.

THE CLEMSON A & M COLLEGE

NOVEMBER 1954



SERVING THE FARMERS
IN NORTH AND SOUTH
CAROLINA SINCE 1906



Planters
Fertilizer & Phosphate Co.

CHARLESTON, S. C.

CHARLOTTE, N. C.

THE AGRARIAN

Volume 14 The Clemson Agricultural College Number 1

Niles C. Clark, Jr.
Co-Editor

Bennie Wiggins
Associate Editor

Ray M. Buck, Jr.
Co-Editor

John D. Patrick
Advertising Manager

Chauncey D. Smith
Business Manager

Thomas E. Hayden, Jr.
Circulation Manager

E. J. Wright, Jr. Feature Editor D. B. Anthony News Editor
Walter Ramage Dept. Editor Edward Brown Photography

Departmental Writers—

Reuel McLeod, Jr., Jack C. Langston, Fred McLaughlin, Jr., Clyde E. Woodall, Weston Weldon, Watt E. Smith, II, D. B. Anthony, A. G. Neil, Jr.

Advertising Staff—

Louis D. Parsons.

Circulation Staff—

Jackie Salters, Charles Johnson.

Advisory Staff—

B. E. Goodale, T. L. Senn, James K. Henderson (Student Advisor)

THE COVER: Clemson's Farm and Home Week annually draws thousands of South Carolina Farmers and their wives to observe the latest in modern farming and homemaking practices and laborsaving devices.

IN THIS ISSUE

Guest Editorial	Page 3
Keep Up the Fight	Page 4
The Drought in South Carolina	Page 5
Clemson's Agricultural Building Program	Page 6
Coastal Bermuda in South Carolina	Page 7
Liquid Nitrogen	Page 8
Between the Furrows	Page 10
I Dare You	Page 13
The Men Who Guide Us	Page 14

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

AGRARIAN PHILOSOPHY

By Bennie Wiggins
Associate Editor

You know, I once kenew a young lady who was quite a number. To go with her flaming red hair, she had a temper which burned almost as brightly, and, believe it or not, her name was Hazel. Our sympathy goes to the hundreds of citizens whose homes were destroyed or badly damaged. It is hard for us, who have not lived through such an experience, to comprehend such damage as was done to the coastal region of South Carolina and other Atlantic States. We, who are in school at the present, are not old enough to know the fury of the tornado of the '20's and have not seen such a storm during our lifetime.

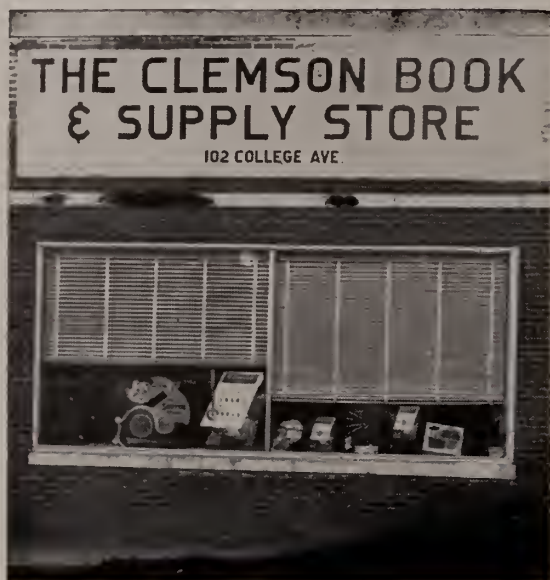
You cannot evaluate the damage in dollars and cents, because money cannot buy the tradition, memories, and feelings which were lost as Hazel hit with all her fury. We sincerely wish for those people who were hurt and for all other South Carolinians, that another Hazel will be a long, long time coming and that the next time we will be better prepared.

THIS ISSUE:

This is the first issue of the school year 1954-55. We hope you will enjoy reading the articles as much as we have enjoyed writing them and publishing the magazine. It has been a grand experience, one of which, we hope to enjoy for the remainder of the year. We would like to call your attention to one new feature this year and that is the introduction of the Agricultural professors at Clemson. They are all fine people to work with, so we thought we would introduce them to you, the public. In coming issues we hope to present to you all of the teachers in the Agricultural Department.

BE THANKFUL:

Take time right now and look about you and let your mind wander. Is there anything that you can think of that you should not be THANKFUL to ALMIGHTY GOD. Really, be thankful for what you have during this THANKSGIVING SEASON.



Two familiar old faces always welcome
you back to the campus.

CLEMSON BOOK STORE
Official College Book & Supply Store

L. C. MARTIN DRUG COMPANY
Serving Clemson Men Since 1908

W. B. Camp & Sons, Inc.

BAKERSFIELD, CALIFORNIA
and GAFFNEY, SOUTH CAROLINA

Buckfield Plantation

YEMASSEE,
SOUTH CAROLINA

“Salesmanship in Today’s Economy”

DR. M. D. FARRAR
Dean of School of Agriculture



In our present day economy the successful business concern is not necessarily the one that produces goods of the greatest quantity or quality; instead, it is the company that manages to get their product into the hands of the greatest number of satisfied customers. Advertising has become big business and the art of selling one of the most sought for abilities. A good salesman needs much knowledge of produce, of books, of people, of management, and of margins. The failure to sell means loss of profits or of the business itself.

Farming is no longer an isolated, independent or simple way of living and of earning a livelihood because farmers are inter-dependent, also, on all businesses that provide equipment, chemicals, etc. It is a highly competitive business that requires extensive training, and a continuing education in trends, marketing, and operation.

The farmer must be a salesman in the truest sense, if he is to succeed, and the wise college student should select courses in speech, journalism, and economics as well as basic courses in agriculture. He must advertise his products by word, deed, and quality product. He must be alert to trends in foods, breeds, equipment, and marketing. Necessarily, he must produce both in quantity and quality, but must also help to create new uses for agricultural products. He must make endless experimentation with varied crops or livestock to most successfully meet the market demands. Just as a salesman, he must “deliver the goods.” The final test of good selling is in the margin of profit. To show a profit, in spite of weather, fluctuating prices, government restrictions, and changing demands, will require all the training, judgement, and skill equal to any executive in any line of business. Farming is the oldest business, yet it has become revolutionized into one of the most challenging through new demands and the opening of new uses for old products. The salesman is measured by his satisfied customers and to that ideal is all farm produce routed.

The Farmer must be a good consumer, a good producer, good executive; but in the final analysis, his success is measured by his ability as a salesman.

Keep Up the Fight

and Keep Insects Down

By Jack C. Langston, Ent '56

Many cotton farmers of the state are now destroying cotton stalks as soon as their cotton has been harvested. These wise individuals are keeping up the fight against insects right on through the winter.

Destroying cotton stalks is a very effective and economical means of controlling both insects and diseases. This early destruction reduces the number of boll weevils that live through the winter by destroying their food supply and forcing them into a starvation period and into earlier hibernation. Weevils thus weakened stand little chance of living through the winter. The longer the period of time between stalk destruction and the first frost, the greater will be the kill during the winter. Few weevils survive when stalks are killed a month before frost. The early destruction of the breeding places will mean that there will not be a young generation of weevils to go into hibernation.

Destroying cotton stalks early will not only aid in the control of insect pests but will also aid in the control of several cotton diseases such as ascochyta blight, anthracnose, and angular leaf spot. Exposure of the plant roots to sunlight reduces nematode infestations. For most effective control of the fungus diseases the crop residue must be thoroughly rotted before planting time. The stalks may be destroyed by plowing them under, by cutting them with a mowing machine or a bush cutter, or by turning cattle on the cotton fields to graze. In destroying these stalks, many weeds and grass are destroyed too. This means fewer weeds and grass "go to seed" in the field, as the seeds are prevented from ripening.

Highest quality lint is obtained. Early harvest, necessary for early stalk destruction, gives higher grades of lint, and consequently higher



One of the newer types of stalk-shredding machines in action

prices, because of reduced weather damage. Green cotton stalks shredded or plowed under early is a good soil-improvement practice. It adds organic matter, conditions the soil, and increases the water-holding capacity of the soil. The stalk residue problem is reduced. Chopped-up material will decay faster and insect-hibernation quarters are reduced. Seedbed preparation and cultivation operations with mechanical equipment are made easier the following year. The land is also prepared for winter cover and soil-building crops.

After a bollworm matures, it drops off the plant onto the ground and burrows in to spend the winter. It emerges the next spring as a moth, ready to lay eggs to produce more bollworms. By plowing up cotton stalks, you also bring these worms closer to the surface where they will be exposed to the cold, thus, lessening their chances for winter survival.

This past summer I made cotton insect surveys, working particularly with the boll weevil and the bollworm. It has been my experience to find boll weevil infestation highest near ditches, tobacco barns, trash piles, wood piles, uncultivated fields, and, of course at the edge of woods. You will note that all of these places afford the boll weevil excellent protection during the winter. By cleaning up trash and wood piles, plowing under the weed infested uncultivated fields, and cleaning out ditches, we destroy the boll weevil's quarters. Burning off these ditches and fields is not recommended. Cleaning up these can be done after the harvest when there is more spare time.

The dry season we have had this year has been hard on the insects, too. If we take advantage of this and keep up the fight through the winter, we will have fewer insects to fight next year. Fighting our in-

(continued on page 12)

The Drought in South Carolina

By Elbridge J. Wright, Jr.
Agronomy '56

In recorded history of the state of South Carolina it would be hard to find a year that brought with it a drought of the kind that this state and neighboring states have suffered this year. The drought has not been spotted but has affected all counties of the state on about the same basis. The effects of this drought upon the people of this state will have much more significance to the farmers and other people as winter comes on and the empty barns and bins become a stark reality.

The severeness of this drought has several causes, each of which is partially responsible for this disaster which has stricken the farmers and many other people of the state.

One factor that increased the severity of the drought is the fact that we have had three dry years preceding this one. The water table had already been lowered by these dry years, and with the onslaught of the monster drought of this year the water table fell still lower until now in many places wells have had to be deepened in order to keep them in use. In many places in the state, the water table has dropped so low that many of the trees have shed their leaves a month earlier than usual, and in some cases there have been trees that have died as a direct result of the drought.

Combined with a low water table, we have had a large number of days of excessive temperatures. On many of the days this summer the temperature has reached the 100° F. mark and above. This excessive heat has sapped much of the moisture from the soil and in some cases the heat has directly damaged many crops.

The most direct factor that has increased the severity of the drought has been the decided lack of rainfall during 1954. In many of the counties

in the state, there is a deficiency of from 12 to 15 inches of rainfall for this year. This deficiency has largely occurred at the worst possible season of the year, from April through August. During these months most crops have to have a large supply of water, or production will be cut drastically. Of course, when this rainfall did not occur, the effects on the crops of South Carolina has been devastating.

Crop production for the year 1954 will probably be the lowest in recent years. Some crops have been hit harder than others, but nearly all crops have been damaged to a large extent.

The total 1954 crop production for South Carolina is expected to be 19% below final out-turn last year and 21% below average for the ten years 1943-52.

The volume of fall harvested crops will be even lower—31% less than last year and 38% below average.

Spring harvests were the only bright spots in the picture. There was a 5% increase in small grains over last year and a 32% above average crop for the ten year average.

Probably the two hardest hit crops in South Carolina this year have been corn and truck crops. Where these crops received no irrigation, they have, with a few exceptions, been an almost complete failure. The corn crop is expected to be about 50% less than a normal crop. This would be the smallest corn crop in South Carolina since 1901.

Pastures in this state have almost failed to produce any feed this summer. In many counties farmers have had to feed their livestock as though it were the middle of winter. As a result the farmers have had to use up their reserve supply of feedstuffs

with no indication of their feed crops replenishing this used up reserve.

Most of the hay crop has been hit severely. The two main hay crops in South Carolina, lespedeza and cowpeas, have been cut drastically in many counties and are a complete failure in many localities. The estimated production of hay for 1954 is less than half a normal crop. There is no doubt that the farmer will find his barns shorter on hay and other feedstuffs this year since the coming of the major hay crops to South Carolina.

The tobacco crop, a major crop in South Carolina, has definitely been cut by the dry weather. The estimated production of 148,800,000 pounds of tobacco for 1954 is a good bit smaller than last years production of 172,630,000 pounds. Tobacco was not hit as hard as some crops since it matures earlier than some of the other fall harvested crops.

Cotton, the major money crop in most counties of South Carolina, has been hit harder this year by drought than in many a year. Cotton can withstand more dry weather than most crops, but it too reached the breaking point and production for this year will be down accordingly. The 1954 cotton crop is expected to be from 450,000 to 480,000 standard bales harvested from 858,000 acres compared with a crop of 690,000 bales harvested from 1,175,000 acres in 1953.

This drastic cut in crop production for South Carolina will have a definite and drastic effect on the farmers and other people of South Carolina. Even with good years in the future, it will take time to overcome the effects of this major drought.

Did this drought have to occur? Of course we can not make it rain when we want to, but we do have other

(continued on page 20)

Clemson's Agricultural Building Program

D. B. Anthony, Poultry '56

Clemson's dream of a new agricultural center is rapidly becoming a reality. Anyone who has not been to the old horticultural grounds recently is in for a big surprise when he sees what has happened there. The old greenhouses are gone, the hill has been leveled down, and on it stands a steel and concrete giant which covers almost an acre and a half of ground! This giant is the partially completed Plant and Animal Science Building, part of the first phase of the agricultural building program of Clemson College. This program also includes a Food Industries Building, located to the side of the Plant and Animal Science Building, the ten new greenhouses located behind these buildings, and the addition of an agricultural auditorium to the Clemson House.

The Plant and Animal Science Building, designed by the architectural firm of Lyles, Bissett, Carlisle and Wolff of Columbia, S. C., is a completely air conditioned unit consisting of two floors and a basement. The building will contain 175,000 square feet or four acres of floor space. The first and second floors will have offices around the outer perimeter of the building. On the first floor will be the offices of the departments of dairy, poultry, horticulture, and forestry. The departments which are to be on the second floor are animal husbandry, food technology, seed certification, agronomy, fertilizer inspection and analysis, and the soil testing laboratory. Besides the offices around the perimeter of the building, there are the classrooms, student laboratories and research laboratories in the center. These will be divided into groups with halls running between them. Generally the classrooms with accompanying laboratories will be on

the west side of the building with the research laboratories on the east side. There will be 15 regular classrooms seating from 25 to 150 persons. Also, there will be an auditorium which will seat 250. It will be on the front of the building immediately to the right of the entrance. All lighting in the classrooms and laboratories will be of an artificial indirect type since there are no windows opening to the outside.

About one-fourth of the basement will be used for a publication department and a photographic section. There will be a four-room mailing and reproduction section where all bulletins and other material will be kept. An additional mailing room will serve as a sort of agricultural department post office. Another part of the basement will be used for storage. The rest of it will be left unfinished for the present.

The photo section will contain about 20 rooms. Among these rooms there will be two rooms for radio and television. This means that live radio and TV shows may be put on. There will be several dark rooms, one of which will be specially equipped for handling movie and television film processing. The others will be for processing ordinary film, printing, enlarging, slide production, and storage. There will be facilities for every type of photography except color photography.

There is a covered walkway which leads from the dairy department in the Animal Science Building to the dairy laboratories which are in a 308 by 176 foot building known as the Food Industry Building. This building designed by the architectural firm of Hopkins, Baker and Gill of Florence, has approximately 50,000 square feet, 1.1 acres of floor space and is costing \$896,000. It will

contain the processing plants for the dairy, horticulture, animal husbandry, and poultry departments.

The horticulture pilot plant will be on the end facing the Agricultural Engineering Building and to the rear of the building. It will contain facilities for any type of canning and processing. The animal husbandry facilities for slaughtering and meat processing are on the same end, but toward the front of the building. A section across the rear of the building has been allocated to the poultry department. This will contain a complete plant for dressing poultry. In the center of the building, there are numerous refrigeration rooms. These will be kept at various temperatures depending upon their contents. These rooms will be used by all departments, except the dairy department which has its own refrigeration facilities. The dairy department will occupy the end of the building which is nearest to the Plant and Animal Science Building. Here all dairy products will be processed and sold. Also in the front of this building is a large demonstration - lecture room. This room has a folding partition in it which can be moved back to make an auditorium seating 500.

In front of these two buildings is to be a large square. When completed it will be planted in grass and shrubbery with walks leading to the doors of the buildings. There will be a spray pool in front of the Food Industry Building which will serve to cool the refrigeration units. The road which now goes past the Agricultural Engineering Building will be converted into a walkway leading to this square.

To the side and rear of the Food Industry Building are the green-

(continued on page 18)

Coastal Bermuda in South Carolina

By Reuel McLeod, Jr., A.H. '55

From the Atlantic Ocean to the foot of the Blue Ridge Mountains, farmers and cattlemen are planting Coastal Bermuda. A modern Rip Van Winkle, awakening after 20 years of sleep would most certainly shake his head and repeat again and again the simple question, "Why?" Back of his question would be a lifetime of fighting Bermuda grass, a battle that had relegated it to the position of public enemy No. 1 on most cotton farms by 1933. At that time only the cattlemen were conscious of its value as a pasture plant. Rarely did they plant it, for they could usually meet their feed requirements by grazing fields in which Bermuda grass had won the battle.

One might well begin his answer to Rip's question by pointing out that Coastal Bermuda is a triple-threat grass. Common Bermuda makes good grazing but rarely grows tall enough to mow. Coastal Bermuda, however (like the triple-threat football player that can run, kick, or pass), grows tall enough to produce hay or silage in addition to supplying excellent grazing. Thus, surplus grazing can be used for either hay or silage and a year-around supply of feed can be obtained from one grass.

Important as the triple-threat character may be, there are other reasons for planting Coastal Bermuda. Much of the interest in 1954 stems from the superior drought resistance shown by this grass in 1953. Farmers throughout the state reported that Coastal Bermuda remained green and supplied grazing after Common and many other pasture grasses had turned brown. Coastal has a distinct advantage over Common in that it is deeper rooted. On loamy sand soils Coastal roots have been traced to a depth of 8 feet by mid-summer from sprigs planted in March. This characteristic accounts for the lush green growth that prevailed on the dry soil due to the drought and the naturally sandy soil in the state.

Just what makes this grass so remarkable? Coastal Bermuda is a hy-



No shortage of grass here

brid that was developed by Dr. Glenn W. Burton, geneticist, USDA, Georgia Coastal Plain Experiment Station, Tifton, Georgia. It was produced from the crossing of tall strains of South African Bermuda, Common Bermuda, and Tift Bermuda. Compared with Common Bermuda, Coastal has several superior qualifications; namely, it makes more vegetative growth, grows later in the fall, is more cold-resistant, and is more resistant to leaf diseases and root-knot nematode. On the other hand, it will not persist as well as Common Bermuda when it is overgrazed and mistreated. It will not compete successfully with Common Bermuda when grown with Common in a closely grazed pasture sod.

The stems, stolons, and rhizomes of Coastal are larger and have much longer internodes than Common. The leaves have a characteristic green color and are much longer than those of Common. Coastal Bermuda produces very few seed heads, and those that are produced rarely contain viable seed. This lessens the danger of spreading by livestock. Experimental results at Tifton have shown that Coastal Bermuda consistently produces more beef per acre than any other grass tested.

Fertilization

Areas to be planted in Coastal Bermuda should be tested and limed in the same manner as land to be planted in other pasture grasses. Apply 600 to 800 pounds of 3-12-12 fertilizer per acre in the drill at planting time and topdress along the row with a nitrogen fertilizer when the plants start growth. When stolons are plentiful, they are sometimes broadcast, disked in and cultipacked. When this is done, 600 to 800 pounds of a 3-12-12 mixture per acre should be applied broadcast and worked into the upper portion of the topsoil before the stolons are scattered.

Established sods of Coastal Bermuda on light soils should be topdressed with 800 to 1,200 pounds of 3-12-12 fertilizer (or 6-12-12 on heavy soils) per acre annually, applied broadcast in split applications of fertilizer, especially nitrogen, are very profitable on Coastal Bermuda. Liberal fertilization increases the protein content as well as the amount and quality of the grazing or hay. Sufficient nitrogen topdressing should be used to provide the desired growth for grazing or hay. For intensive use, Coastal Bermuda sods should be topdressed during the

(continued on page 18)

Ammonia -- A Liquid Fertilizer

Watt E. Smith, II, Ag. Eng. '56

Ammonia, a very good source of nitrogen, is the cheapest fertilizer furnishing nitrogen that has ever been known. It, in the anhydrous state, furnishes 82% nitrogen plant food. Special equipment is necessary to apply ammonia, but this is not a draw-back.

Chilean nitrate of soda was the first commercial source of nitrogen. Nitrogen as a by-product from coking coal followed, and since about 1900 nitrogen has been produced synthetically from the air. The cyanamid process, the nitrate process with the electric arc, and synthetic ammonia utilizing high pressure are the present methods for producing synthetic nitrogen.

Most synthetic ammonia is converted into ammonium nitrate for fertilizer uses. In the converting process ammonia is used to make nitric acid which is combined with more ammonium to produce the ammonium nitrate (NH_4NO_3). This nitrate is treated with rosin, paraffin, and clay before it is put into moisture proof paper bags. About seven per cent of the nitrogen in the beginning ammonia is lost during the converting process.

On a cost comparison basis, one ton of ammonia which has 1640 pounds of nitrogen is produced just as cheaply as one ton of ammonium nitrate which has 650 pounds of nitrogen. Comparing on a pound basis, nitrate of soda cost 18 cents; cyanamid, 15 cents; ammonium nitrate, 9.5 to 10 cents, and anhydrous ammonia, 6 to 7.3 cents. From this comparison a large experimental program on anhydrous ammonium was started in 1943 to determine its value as a supply of nitrogen for plants.

The experimental work was carried on for four years before any information was released to farmers. Throughout this period, research and tests were conducted to determine the response on corn, oats, and cotton, and to the different types of machinery for its application.

At present, the application of anhydrous ammonia, and to a small extent aqua ammonia, is practiced through the southeast. The acceptance of ammonia forms as a fertilizer is spreading.

Anhydrous ammonia, containing 82% nitrogen, has a weight of five pounds per gallon and contains 4.1 pounds of nitrogen. It is a gas at normal temperatures and pressures. At -28 degrees F. it is a liquid at standard pressure, and it will exert a pressure of 75 p.s.i. at 50 degrees F. Generally ammonia is handled in the liquid state under pressure.

Anhydrous ammonia with a small amount of water present corrodes brass very rapidly; therefore all containers must be fitted with iron or steel connections. Another precaution is not to use butane or propane gas bottles for fuel after ammonia has been in them because the propane or butane gas when burned with the ammonia in it forms hydrocyanic acid fumes which are very poisonous to humans.

Aqua ammonia has properties similar to anhydrous ammonia. It is a liquid at standard conditions containing 27 to 31 percent nitrogen. A gallon of it weighs 7.4 pounds and contains 1.85 pounds of nitrogen.

The crop responses to anhydrous and aqua ammonia have been quicker than to ammonium nitrate. When ammonia is applied to the soil it immediately goes into solution in the soil water which is an advantage over the solid forms of nitrates. The solid forms of nitrates give better results at shallow depths, but ammonia which is easily applied at depths of four to six inches is superior to the solid forms at shallow depths.

For small grains, ammonia is an excellent nitrogen source. It can be applied before and after the grain has been planted. Ammonia as a top dressing is difficult to become effective if the physical condition of the soil is poor.

Ammonia will certainly kill germinating seed if it comes in contact with them. However, ammonia applied before planting at a depth of six inches will not injure the seed in any way.

On the farm where row-crops are planted, ammonia lends itself very well as a supplier of nitrogen. Both ammonia forms are used for pre-planting and side dressing applications. On row crops the following operations with ammonia were used: (1) applied on level land before planting, (2) applied on bedded land before planting, (3) applied and bedded the land in one operation, and (4) applied as a side dressing.

The equipment for handling anhydrous ammonia is not complicated, but it must have certain safety devices. All tanks used have certain safety devices. All tanks used for storage must have a 250 p.s.i. rating or some means to control the temperature of the liquid inside. Necessarily, all tanks must have some pop-off valve or pressure release devices. Field transport tanks usually have 1,000 gallon capacity which is the equivalent of 4,100 pounds of nitrogen or enough to apply 40 pounds per acre to 102 acres. The equipment for applying the anhydrous ammonia with a tractor essentially is a tank, a pressure regulator, a pop-off valve, a metering device, lines to the foot, and a foot with nozzle on the back side of it. The type of foot used is narrow and long, similar to a sub-soil foot.

Unfortunately, no tests have been conducted to determine the feasibility of applying anhydrous ammonia during the winter months. However, indirect sources have suggested that it should not be applied to row crops before March 1, but would probably be as good as ammonium on small grains during winter months.

In general, anhydrous ammonia is a better fertilizer if the pH factor of the soil is about 5.5 and above.

(continued on page 12)

In pioneer times the woodlot was usually an uncleared patch of virgin forest, sometimes a windbreak planted to shelter a prairie home. It furnished fire-wood, perhaps shade and poor pasture for livestock. For generations the woodlot has been too much taken for granted, or ignored.

Today the woodlot presents new challenge, new opportunity—especially to farm youth. Fenced to prevent damage due to pasturage it may be a watershed to fill a pond, a refuge for wild life. It may be selectively harvested to yield saw logs, rail ties, fence posts, or pulp wood. It may be replanted, perhaps with Christmas trees, to produce better returns in years to come. So managed, a wooded area may indeed be an endowment, begun in boyhood to mature in the fullness of manhood.

All this is a place for the energy and ingenuity of youthful enterprise. There are new applications of conservation principles, new techniques of tree culture, new methods for planting and harvesting trees. With the help of a modern tractor, and some supplementary equipment, woodlot enterprise can be both pleasant and productive. J. I. Case Co., Racine, Wis.

Woodlots Need YOUNG Ideas...

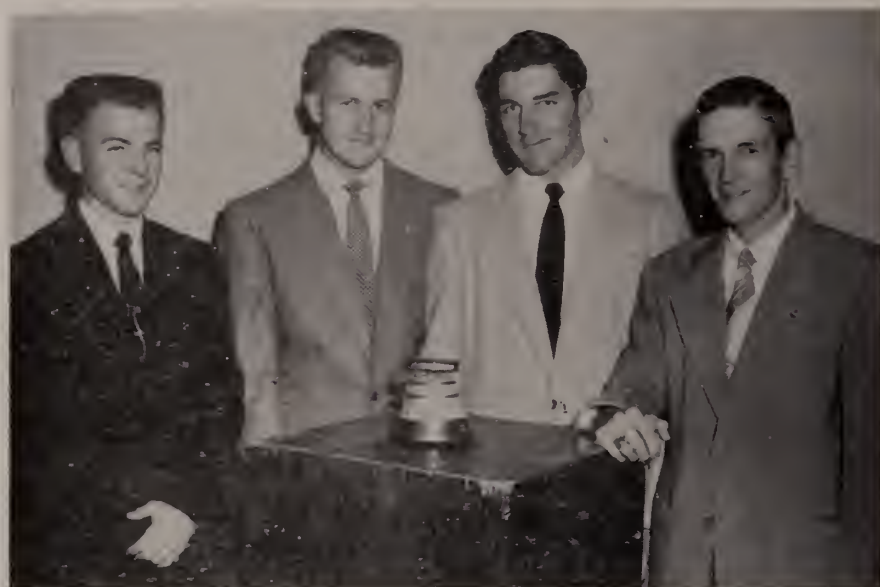


Master of woodlot tasks is the Case "VAC-14" low-seat tractor, shown here with half-tracks added for work in soft ground. With PTO auger to dig holes and utility carrier to haul materials it speeds the planting of young trees or the building of protective fence. The same Eagle Hitch carrier lifts and moves logs without damage to the stand. With loader and fork lift it puts logs into piles or onto trucks. The "low-seater" has adjustable tread and full under-clearance for work among trees and stumps, convenient power to pull transplanters and drive saws.



CASE

Serving Farmers Since 1842



Judging team members, left to right, are Jimmy Verdin, Bennie Wiggins, Cecil Jordan, and coach, Professor C. C. Brannon.

DAIRY JUDGING TEAM

A recent trip which is of interest to person's interested in the dairy industry, is one taken by the Clemson College Dairy Judging Team. The team was composed of Cecil Jordan of St. George, Jimmy Verdin of Greenville, Bennie Wiggins of Columbia, and Prof. C. C. Brannon as coach.

On September 27, the team left for Memphis, Tennessee and the Southern Inter-Collegiate Judging Contest. At Memphis, the team judged three breeds of cattle, Jerseys, Guernseys, and Holstein-Friesians. Out of ten teams represented, the Clemson team placed 6th. One member Bennie Wiggins, was 8th high judge in judging Jerseys.

On October 1, the team judged at the National Contest, which is held at Waterloo, Iowa, at the National Dairy Cattle Congress; the Congress having the reputation of being the number one dairy show in the United States. The Clemson team along with 29 other teams judged all five of the major dairy breeds of cattle. Clemson placed 12th out of the thirty colleges and universities repre-

sented, which was the highest a Clemson team has ever placed in its history of participation. Clemson was also honored in having the top Brown Swiss judge in the nation, in Jimmy Verdin. From all reports the team certainly inspected some of the best registered dairy cattle herds in the nation, along with seeing some of the top cattle of all breeds at the two shows. On the return trip, several dairy plants and equipment manufacturing companies, which proved of especial interest to the four Clemson men, were visited.

We think the entire team and its coach should have a pat on the back for the fine showing they made in the National Contest . . .

ALPHA ZETA TAKES IN NEW MEMBERS

On October 11, six new men were formally initiated into the South Carolina Chapter of The Fraternity of Alpha Zeta, national honorary agricultural fraternity. Alpha Zeta members are selected on the basis of their scholarship, leadership, and character.

The new members are the following named men: Willis W. Crain, a dairy senior from Chester; Richard F. Elliot, an animal husbandry junior from Rimini, S. C.; Alfred H. Hudson, a dairy junior from Bluffton; James D. Martin, an agricultural engineering senior from Lyman; James A. Murphy, an agricultural engineering senior from Starr; and Chauncey D. Smith, a dairy senior from Spartanburg.

4-H CLUB MEETS

The Clemson College 4-H Club held its first meeting of the school year Thursday night, October 14, 1954. James R. Hill presided over the opening of the meeting.

Dr. Willis A. King, club adviser, and Mr. Leon O. Clayton, State Boys' 4-H Club Agent, gave brief talks before the election of officers was held. The new officers are: President, Douglas K. Britt; Vice President, Billy Joe Bailes; Secretary, Don B. Still; Treasurer, Howard Thomas; Reporter, Harry Jones; Corresponding Secretary, Billy Hill; and Sergeant of Arms, Graham Pritchard. Following the appointment of Social, Program, and Membership committees, the meeting was formally adjourned.

ALUMNI NEWS

W. Oliver Paine, Dairy '38, one of the famous football stars of the Paine family of Greenville, S. C., now owns a dairy farm at Danville, Kentucky.

J. F. Norris, Dairy '37, is Production Manager of Barbers Pure Milk Co., and White's Dairy in Birmingham, Alabama.

John Pitts, III, Agron '50, also former editor of the *Agrarian*, is now sales representative with the Spartan Grain and Mill Co., with headquarters at Chester, S. C. He is a veteran of both World War II and the Korean conflict. He is a distinguished military graduate of Clemson.



BLOCK AND BRIDLE CLUB NEWS

The Block and Bridle Club, a part of the National Block and Bridle Club, which is composed of students majoring in Animal Husbandry and other students that are interested in the field of Animal Husbandry, has gotten off to a good start this year.

The first meeting was held on September 21. At the second meeting, held on September 28, prospective new members were present to hear an inspiring talk on the importance of extra-curricular activities in a college career. This talk was delivered by Professor L. V. Starkey of the Animal Husbandry Department. During the week of October 4-8, fifteen new members underwent informal initiation into the club. On October twelfth, the formal initiation was held at the "Y" Cabin after a tasty supper of hamburgers which was prepared by a club committee.

The Block and Bridle Club is looking forward to a wonderful year of good programs. The Program Chairman is Robert C. McDaniel of Leeds, S. C.

Jack L. Moore, '54, is now employed with Atlanta Dairies Cooperative in Atlanta, Georgia.

David Fricke, Dairy '52, a Korean veteran, has been employed by Coble Dairy Products, Inc., in Greenville, S. C.

W. B. McConnell, Dairy '35, is now Production Manager of Foremost Dairies in Miami, Florida.

W. M. Thackston, Dairy '35, is Sales Manager of International Harvester in Greenville, S. C.

F. M. Grey, Dairy '34, is now Director of Production for all of the Southern Dairies chain with headquarters in Charlotte, N. C.

W. Gordon Lynn, Dairy '34, famous athlete at Clemson, is co-owner of Dillon Truck and Tractor Co., of Dillon, S. C. His partner is Ted Dozier, Ag En graduate of Clemson, and also a famous athlete.

A.S.A.E. NEWS

Approximately seventy students and faculty members of the American Society of Agricultural Engineers met at 5:30 p.m. on October 28 at the Y.M.C.A. Cabin for a barbecue supper and the initiation of new members. A brief but interesting talk on the history and accomplishments of the local club was given by Mr. W. N. McAdams, Associate Professor of Agricultural Engineering. Mr. G. B. Nutt, Head of the Agricultural Engineering Department and recently elected National A.S.A.E. President, commented on the work of the national organization and complimented the club for its good standing.

The local student club won second place among the larger schools in the Farm Equipment Institute's annual achievement contest last year. Sixty-four members comprise the present enrollment. Officers for this year are John D. Patrick of Clemson, President; Hoyt Hardee of Loris, Vice-President; Claude Lowry of Pembroke, N. C., Secretary and Treasurer; and David Martin of Lyman, Reporter.

E. W. Able, Dairy '32, is manager of the Shrine Mosque in Albany, Georgia.

J. A. Hudgens, Dairy '30, is an Artificial Breeding Association Technician in Sunnyside, Washington.

J. G. Moxon, former member of the dairy staff at Clemson, is now Vice-President of Ocala Lumber Co., in Ocala, Florida.

R. W. Dickson, Dairy '29, is now the director of farm service for Lindsay Robinson Milling Co., in Roanoke, Virginia. He was formerly a member of the staff at Clemson.

J. W. Guy, Dairy '29, is an engineer with the Cellophane Division of DuPont Co., in Richmond, Va.

R. N. McClain, Dairy '29, is Agricultural Advisor and Vice-President of the Brownfield State Bank and Trust Co., of Brownfield, Texas.

R. M. Jones, Dairy '31, is V.A.E. teacher in Pendleton, S. C. He received his M.S. degree from Clemson in '53.

Dr. C. R. Swearingen, Dairy '37, is practicing veterinary medicine in Smithsfield, North Carolina. He received his Doctor of Veterinary Medicine degree at Alabama Polytechnic Institute.

John Earl Wessinger, Dairy '50, is a student in the dental school at the University of Virginia at Richmond, Va.

Lt. W. A. Smithwick, Dairy '49, a jet pilot in the Air Force, is being transferred from Donaldson in Greenville to Langley Air Force in Virginia.

C. E. Cousins, Dairy '48, is now field man for Pet Dairy Products, Inc., of Columbia, S. C.

A. C. Haskell, Dairy '27, is Manager of Haskell Dairies in North Augusta, S. C. Mr. Haskell received his M.S. degree from Missouri.

J. L. King, Dairy '28, is County Agent at St. George, S. C., and now resides in Ridgeville, S. C. He is a former 'Herdsman for the Clemson College Dairy Department.

W. A. Hambright, Dairy '25, is Secretary - Treasurer and manager of the Spartanburg Production Credit Association in Spartanburg, S. C. He received his M.S. degree from the University of Maryland. Mr. Hambright owns a dairy farm in Blacksburg, S. C.

H. E. Branyon, Dairy '47, is the manager of the newly opened Coble Dairy Products plant in Greenville. He has been superintendent of a dairy in Bluefield, West Virginia, for the past several years.

J. D. Fuller, Dairy '42, is now District Manager for Ralston Purina Co., in Romney, West Virginia.

G. R. Hamilton, Dairy '41, is now manager of two Foremost Dairy plants in Columbia, Tennessee.

KEEP UP THE FIGHT

(continued from page 4)

sect enemies is not the job of just a few people, it is everybody's fight. Little benefit is derived if only a few farmers cooperate. The more farmers in the fight, the greater will be the returns for all. We averaged only one-third the number of boll weevils this year that we fought last year. This number can be reduced even more next spring by early stalk destruction and by following recommended practices.

During the winter is also an excellent time to be thinking about and planning your poisoning program for next year. Experiments have proved time and again that a well-planned and executed poisoning program is far more effective, beneficial, and economical than is the haphazard method used by so many farmers. Today, farming is a science and for it to be successful, must be operated scientifically. A well-planned poisoning program is a very important part of the science of farming. Your County Agent or an Extension Service worker will be glad to help you plan a poisoning program. This winter is also a good time to repair poisoning equipment and get it ready to start in on schedule next spring.

Remember that using high rates of complete fertilizers will not give the highest profitable returns without a complete insect control program. Insure your UNDERGROUND INVESTMENT with ABOVEGROUND PROTECTION.

For further information concerning recommended insect control practices, see your County Agent, nearest Experiment Station, or write to Clemson Agricultural College, Extension Service, Clemson, S. C.

LIQUID FERTILIZER

(continued from page 8)

The use of anhydrous ammonia as a fertilizer or otherwise is restricted by a number of patents.

The source of this article is bulletin number 451, February 1948, of the Mississippi Agricultural Experiment Station, State College, Miss.

"One of the best in the South. . . ultra-modern. . .", says



Clemson
House



In the foothills of the beautiful Blue Ridge Mountains, you'll find the Clemson House located in a unique setting - right on the campus of Clemson College. Here you will find all of the services of a great metropolitan hotel yet you will be far away from the noise of a large city. And you'll enjoy the beautifully landscaped grounds and the flower beds. The splendid accommodations and the excellent cuisine offered at the Clemson House are combined with warm, friendly hospitality and fine service. The Clemson House is a gem among fine hotels and the rates are almost unbelievably low. All public rooms are air conditioned. Four dining rooms and the Tiger Lounge and Coffee Shop. There is swimming, fishing and golf nearby.

Fred L. Zink, Jr., Manager

On East Edge of Clemson, S. C. On U.S. 78, 123 & State 28

PENDLETON FERTILIZER

Issaqueena Feed

Cottonseed Products

Certified Cottonseed

Insecticides

PENDLETON OIL MILL

PENDLETON, SOUTH CAROLINA

I Dare You

N. C. Clark, Jr., A. H. '55

To all Freshmen and Juniors majoring in Dairying, Animal Husbandry, and Poultry Husbandry, I make the following dare: I dare you to put forth a maximum amount of effort in your scholastic work in order to be eligible to receive the Danforth Freshman or Junior Fellowship. I was awarded the Junior Fellowship this year and received an all-expense paid trip to St. Louis, Missouri to observe and study the management principles and general production problems of the largest feed company in the United States—the Ralston Purina Company. I also received an expense-paid trip to, and a two-week stay at Camp Miniwanca, which is one of two such youth leadership training camps operated by the American Youth Foundation. The Freshman Fellowship consists of a two-week stay at Camp Miniwanca, and was awarded this year to Ben McDaniel, Poultry Husbandry major from Pickens, South Carolina.

The Freshman and Junior Fellowships are awarded in the Ag Schools in every state. This year, on the Junior Fellowship, there were thirty-seven boys from as many state colleges and universities, including Hawaii and Canada. During the four-week program we all made lasting friendships, and although we may never forget the fun and fellowship we had together.

The Fellowship was first offered by the Danforth Foundation and the Ralston Purina Company in 1929. The plan was to bring together outstanding men from leading state universities for a four-week program of study, research, leadership training, and fellowship. The program was designed to give to young men on the brink of graduation, an insight into the business world and help them to adjust themselves to their jobs after graduation. Opportunities for agriculturally-trained men, the relationship between business and agriculture, and a wonderful two weeks of camp experience were included in the training.



Ben McDaniel, Mr. Danforth and Niles Clark

Since 1929, the Fellowship has been recognized internationally. Mr. William H. Danforth, chairman of the Board and Founder of the Ralston Purina Company, and Founder of the Danforth Foundation is tremendously interested in the activities of the Fellowship, and each year he gives considerable time in helping to build the program.

Mr. William H. Danforth, a wonderful man to know, has had much success in the business world and, at the age of 83, is still active in the Ralston Purina Company which he started in 1894. He first began mixing mule and horse feeds because he felt that a mixture of feeds was more nutritious and complete than either of them when fed alone. This is indicative of Mr. Danforth's sound thinking which has gone far toward making his company what it is today. The company's record is a good one. It began with an investment of \$6,000 and now is evaluated at \$164,000,000.

Mr. Danforth's story of success is not an easy one. He was born in Eastern Missouri and had an early life filled with sickness. One of his teachers, George Warren Krall, dared him to become the healthiest boy in his class. Mr. Danforth took the dare and, as a result of exercise, good food, and will power, became

one of the healthiest boys in his class and, indeed, he has outlived most of his classmates. Constant improvement in the fields of physical, mental, social and religious development is Mr. Danforth's philosophy of life. He strongly asserts his beliefs along this line in one of his books, "I Dare You." This book can be obtained by sending \$1.25 to the "I Dare You" Committee, 835 Checkerboard Square, St. Louis 2, Missouri. The book is a very good gift to make to young boys and girls and the profits from it are given to the cause of youth.

The Danforth Junior Fellowship is a rewarding experience. The program is so planned as to make everything done by the fellows, a complete surprise. This adds greatly to the effect of the Fellowship and is quite unique. The Fellowship begins with the arrival of the fellows in St. Louis during the early part of August. The fellows immediately proceed to Washington University which is to be their home during the first two weeks of the Fellowship. Early on the morning after their arrival, the group leave St. Louis for Gray Summit, Missouri where Purina's 738 acre research farm is located. There, the fellows study the layout of the farm where Purina tests all its Chows before putting them on the market. At the farm, an interesting program is arranged which includes study, recreation, fellowship as well as plenty of good home-cooked food. More than 12,000 people annually visit the research farm to look over the feeding experiments and management practices that are conducted there on all kinds of commercial livestock and poultry.

After three days at the farm, the fellows return to St. Louis where they take part in a program which includes condensed lectures on nutrition, research in the nutrition field, laboratory methods used in analytical research, personnel management, establishment of a good

(continued on page 16)

The Men Who Guide Us

A. G. Neil, Jr., A. H. '55

DR. GEORGE M. ARMSTRONG

Dr. Armstrong was born in Appleton, S. C., attended, and graduated from Clemson in 1914 with a B.S. degree. He continued his studies and received his Masters' from the University of Wisconsin in 1917. He received his Ph.D. from the Washington University in St. Louis in 1921.

Dr. Armstrong taught for three years in Washington University and then accepted a position with the South Experiment Station in Florence. After this, he began teaching at Clemson and has taught here for twenty-six years. He now teaches a course in Plant Pathology and is head of the Botany and Bacteriology Department.



Extra-curricula activities include many honors he has received. Dr. Armstrong has been listed in Who's Who in American Education, and Leader's in American Science. He is a member of Acacia Rotary Club, and the Clemson Fellowship Club. Honorary fraternities include Alpha Zeta, Sigma Ki, Phi Sigma, and Phi Kappa Phi.

DR. GEORGE H. AULL

Dr. Aull was born in Pomaria, S. C., attended, and graduated from Clemson in 1919 with a B.S. degree in Agricultural Chemistry. He re-



ceived his M.S. from University of Virginia in 1928 and received his Ph.D. at the University of Wisconsin in 1937.

Dr. Aull taught Vocational Agriculture for two years before coming to Clemson. Besides being Head of the Agricultural Economics and Rural Sociology Department, Dr. Aull teaches Public Finance, Land Economics, and Agricultural Policy.

LEHMAN M. BAUKNIGHT

"Frosty," Professor Bauknight's well-known nickname, was born in Latta, S. C., studied and received his B.S. degree from Clemson in 1935 and later received his M.S. also from Clemson.

After graduating from Clemson in 1935 "Frosty" worked for the Soil Conservation for 7 years, interrupted with a 4½ year period in the Army. Mr. Bauknight teaches Agricultural Finance, Farm Management, and



Conservation of National Resources. He also teaches Agricultural Economics.



JAMES H. BOND

Professor Bond was born in Haynesville, La., attended and graduated from Louisiana State University in 1948 with a B.S. degree. He received his M.S. from Louisiana State University in 1949 and has done graduate work at the University of Texas.

Professor Bond teaches General Bacteriology, Soil Microbiology and Advanced General Bacteriology and has been teaching here for the past six years. Professor Bond is Associate Professor of Bacteriology and a member of the Sage Club.

THE NATIONAL FARM AND HOME HOUR

ON TV

NOV. 30 • 2:00 P.M. CST
NBC NETWORK



Selected Features from **INTERNATIONAL LIVESTOCK EXPOSITION** and **National 4-H Club Congress**

It's the World Series of Agriculture — *don't miss it!* Again this year, Allis-Chalmers presents a full hour telecast direct from Chicago, featuring highlights of the International, interviews with delegates to the National 4-H Club Congress, and other interesting features.

You can have a ringside seat at one of the world's greatest livestock shows. See it as it happens. Here are some of the main events.

- ★ Selection of the Grand Champion Steer by Judge A. D. Weber.
- ★ Judging the champion carlot of steers.
- ★ Interview with 4-H Club national winners, conducted by Everett "It's A Beautiful Day in Chicago" Mitchell.
- ★ Meat cutting and cooking demonstrations by experts of the National Livestock and Meat Board.
- ★ Close-ups of champion livestock and comments by famous judges.

REMEMBER THE DATE — Tuesday, November 30, 2:00 to 3:00 p.m. CST coast-to-coast on NBC television network. Check your newspaper for nearest station or ask your Allis-Chalmers dealer.



ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

I DARE YOU

(continued from page 13)

credit rating, interviews of prospective employees, history of the Ralston Purina Co., and many other subjects. In addition, visits are made to several other businesses in St. Louis. The **Merchants' Exchange** which is a trading center for large quantities of cereal grain and other commodities is visited and explained to the fellows. Also the **C. S. Marketing Co.**, which distributes high-quality eggs is visited. A trip to the East St. Louis Stockyards is on the program, and a tour with **Swift's** livestock buyers as they deal with commission company employees proves to be interesting as well as educational. Later in the day, a guided tour is conducted through **Swift's** packing plant there.

In addition to the lectures and visits, the fellows go on several trips to places of interest in St. Louis. This year, we saw the St. Louis Cardinals play the Milwaukee Braves in Busch Stadium. Also, we went to the Municipal Opera and saw a comic opera "Where's Charley?" On a Saturday,

we went on a sight-seeing tour of the city and went through the Zoo which is one of the better zoos in the country. This year something new was added when we were given choice seats to see "Cinerama," the new type of moving picture with a curved screen and stereophonic sound. On our last night in St. Louis, we enjoyed a nice banquet in the Chase Hotel. After two weeks in St. Louis had flown by, we went together by train to Milwaukee, Wisconsin, and then by ferry steamer across Lake Michigan to Muskegon, Michigan, from where we went on to Camp Miniwanca for the next two weeks of the fellowship. Soon after arriving at Camp Miniwanca, I met Ben McDaniel who was the freshman award winner from Clemson. In addition to the Agriculture Juniors and Freshman, there were several hundred other boys from all over the United States at the Camp. They came from high schools, 4-H clubs, and F.F.A. chapters.

At Camp Miniwanca, we entered into two weeks filled with activities. We had classes in the mornings on Christian ethics, Four-Fold living,

Christian horizons, and life's essentials. In the Life's Essentials class, we heard leaders in the business world tell of their success and how they achieved it. In the afternoon, we had swimming, boating, and sailing in addition to playing softball, volleyball, tennis, horseshoes, badminton, and ping pong. We also had a track meet and an aquatic meet in which everyone participated. Competition in all these sports was very keen due to the fact that the camp was organized into six tribes, each one of which strived to beat the records set by the other. In the evenings we had varied programs. We had vesper programs on Vesper Dune overlooking Lake Michigan. It was an unforgettable experience to see the sun slowly sink from view into the placid waters of Lake Michigan in the early evening as some speaker spoke of the glory of God. Later in the evening, we had entertainment programs which included a sort of "stunt night" in the council circle, a rodeo, a square dance (with boys for partners), and a supper cooked on the beach of the lake.

(continued on page 18)

Big Oak Ranch

BRAHMA — HERFORD — ANGUS
CROSSES

and

Registered BRAHMAS and HERFORDS

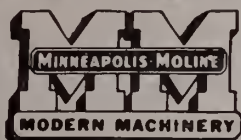
Mt. Pleasant, S. C.

Ray M. Buck, Owner



These folks are looking at **UNI-FARMING**—
the farming system with a built-in future...

ISN'T IT TIME YOU GOT THE FACTS ON **MM** UNI-FARMING?



See this
V-4 engine.



UNI-TRACTOR . . .
your key to profits carries
Uni-Machines piggy-back

Here's the MM Uni-Tractor, the entirely new and different tractor that powers and propels all Uni-Farmor machines . . . puts you right on top of every job. A cross-mounted V-4 engine powers the Uni-Tractor from one end, Uni-Machines from the other. Variable-speed drive lets you change ground speed without changing speed of the mounted machine; Uni-Matic hydraulic power gives you finger-tip machine control. See this Uni-Tractor, and you'll be convinced: there's no other tractor to match it!

When a new way of farming can *save* you money and make you *more* money, a man just *has* to know more about it. Take it from the farmers, engineers, teachers who have seen the Minneapolis-Moline Uni-Farmor in action: MM Uni-Farming is the farming system of the future . . . *ready to go right now!*

These people have seen the MM Uni-Tractor mount, power, and propel Uni-Machines for harvesting grain, bean, seed, corn, and forage crops. They've seen how the Uni-Farmor offers matchless self-propelled operation at a big cash saving over pull-behind equipment. They've seen the Uni-Farmor's speed and capacity slash days from harvest time. They've watched one attachment dismounted and another mounted in a matter of minutes . . . proving that you can actually harvest corn in the forenoon and soybeans in the afternoon of the same day . . . with the same basic self-propelled machine.

MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA



BUILDING PROJECT

(continued from page 6)

houses. There is a Headhouse in the center with five greenhouses on each side. The Headhouse contains a soil processing section, a work room, and a general laboratory. This will serve as a classroom for advanced students. The 10 greenhouses are of clear-span type construction (has no roof supports other than wall and partitions). The walls are made of a tough, durable corrugated material called transite. The benches are also made of this material.

Also included in the Agricultural Building Program is the Agricultural Auditorium which is constructed as an annex to the Clemson House. This auditorium is to serve a dual purpose. First, it will be furnished so as to serve as an auditorium for conventions to meet in those instances where the convention headquarters will be at the Clemson House. At the present time, agricultural conventions and all others must seek quarters for holding meetings at some other place on the campus. It is thought that this auditorium will be very convenient for the many

agricultural conventions which are held at Clemson. Secondly, the annex will be furnished so that meals and banquets can be served. The details of design have been worked out so that the new space can be converted rapidly from one use to the other.

The second phase of the building program is still in the planning stage, and it is hoped the funds for these additional programs of construction will be available so that the Agricultural Center may be completed soon. It consists of an Agricultural Engineering Annex, and animal pathology building, a dairy research barn, and some poultry houses. The Agricultural Engineering Annex is to contain 9,000 square feet of offices and laboratories. The animal pathology building will be just off the Anderson Highway and will have 5,500 square feet for research in animal diseases and veterinary work. The dairy research barns will be in the land-use area near Fant's Grove. They will consist of one large barn of about 6,700 square feet and three smaller ones of about 3,600 square feet each. There will also be four

poultry houses totaling 18,000 square feet and a small storage barn built at the present farm.

The cost of the work of the contract will be approximately \$3,000,000.00 for construction purposes only. To this will be added a sum of from \$350,000.00 to \$550,000.00 for furnishings and equipment. Plans and specifications are now on hand for the construction of the second phase of the work on the Agricultural Program, which will call for the expenditure of about \$300,000.00 in addition to the construction now under contract. All of this construction is a portion of the \$10,200,000.00 construction program which has been completed or is now under construction.

I DARE YOU

(continued from page 16)

The effect of being at Camp Minnawana is tremendous and it would be difficult to attend without being changed for the better in physical, mental, social, and religious, development. Why not put forth a little extra effort, Junior and Freshmen, and be eligible for these two fine privileges for self-advancement?

COASTAL BERMUDA

(continued from page 7)

growing season with 100 to 200 pounds of nitrogen per acre in split applications of 30 to 35 pounds of nitrogen per acre at each application.

Planting

Coastal Bermuda must be propagated vegetatively due to its poor seeding qualities. Although this feature has slowed its rate of distribution, it has not seriously handicapped its utilization on the farm. Farmers growing their own planting stock are finding that it costs less to establish Coastal Bermuda than to plant other pasture grasses from seed.

The farmer planning to plant Coastal Bermuda for the first time will do well to consider starting on a small scale. One or more acres planted on clean land and well cared for will, within a few months, furnish an ever-ready supply of good, fresh sprigs at very low cost. Sprigs for these nurseries will go farther if planted like sweet potatoes, i.e., pushing them into the

(continued no page 20)

"The Home of Good Eats"

SEIGLER'S STEAK HOUSE

Walhalla, South Carolina

*

CLEMSON MEN ALWAYS WELCOME

A report to you about the **TEAMWORK** of men and machines that helps maintain International Harvester leadership

How IH uses **POWDERED METAL** to help farmers save costly grass seed

New band seeding methods enable farmers to get good stands of grasses and legumes, saving up to 30 per cent in seed. But drilling as few as five or six pounds of tiny seeds per acre calls for extremely accurate seed metering.

To improve accuracy without increasing cost of the feeds used in grass seed attachments for McCormick® grain drills, IH manufacturing research and production engineers turned to a study of powdered, or sintered metal—a relatively new metallurgical process for economically mass producing certain types of precision parts.

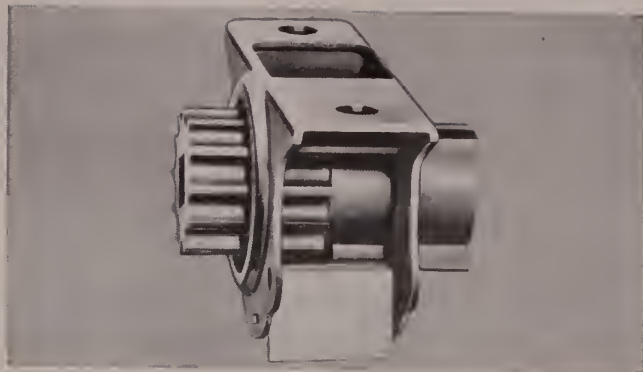
Extensive tests developed the correct "recipe" of powdered iron, copper, and other ingredients; the correct pressure for compressing the powder into form; and the correct temperature for bonding the metal particles in a sintering furnace.

The accompanying photographs show some of the steps by which powdered metal is transformed into grass seed drill feeds of greater precision, providing more uniform seed distribution, and minimizing seed leakage.



The new grass seed drill feed starts with powdered iron, blended with the correct amount of copper, plus a wax to lubricate the dies.

Next, using a hydraulic press with precision dies, the powder is compressed under 40 tons per square inch pressure, forming a "green" compact. This compact is then firmly bonded by sintering for approximately 30 minutes in a furnace at 2050 degrees F.



Here is the finished feed cup assembly with fluted metering wheel and cut-off thimble of sintered metal, with an oxide finish to resist corrosion. Forming these parts from powdered metal in precision dies results in strong feed rolls, each with concentricity uniform to within three thousandths of an inch—as compared with an average of 15 thousandths of an inch for grey iron castings.



Above, a McCormick drill equipped with the new attachment for seeding grass and legume seeds in bands, saving users up to 30 per cent in seed cost. Below, a good stand of a band-seeded grass mixture.

Many other parts of sintered metal have been adopted or are being developed through the teamwork of IH research, design, metallurgical, manufacturing, and field test engineers, working toward the common goal of improving the quality and performance of IH equipment while keeping costs at a minimum. The result is product leadership that helps farmers everywhere reduce production costs and thereby increase farm profits.

For more details write for free engineering paper, "Sintered Metal for IH Farm Equipment Parts." There is no obligation. Send postcard with your name and address to International Harvester Co., P.O. Box 7333, Chicago 80, Illinois.

INTERNATIONAL HARVESTER

International Harvester products pay for themselves in use—McCormick Farm Equipment and Farmall Tractors ... Matar Trucks ... Crawler Tractors and Power Units ... Refrigerators and Freezers—General Office, Chicago 1, Ill.

COASTAL BERMUDA

(continued from page 18)

soil with a thin, forked stick and stepping on them to firm the soil around them.

Coastal Bermuda may be planted from early spring until early fall whenever soil moisture conditions are favorable. Since moisture conditions are usually most favorable during the spring, and since sprigs planted in the spring have a longer initial growing season in which to become established, it is suggested that spring plantings be made whenever possible.

Fresh sprigs should be planted on a well-prepared, firm seedbed in 3- to 5-foot rows and sprigged 2 to 3 feet apart in the row. About 8 to 12 bushels of planting stock are required to plant an acre. The closer the planting, the quicker a sod will be established. More stolons per acre are required when Bermuda sprigging machines are used.

Practice shallow, clean cultivation to control grass and weeds until the Coastal runners meet between the rows. A rotary hoe is an excellent implement for this job, though ordinary sweeps are satisfactory.

THE DROUGHT IN S. C.

(continued from page 5)

ways in which to hold the drought in check. In the state of South Caro-

lina as a whole, we have very little irrigation, but it is getting a start as people see the effects of drought and realize that something must be done.

We here in the Southeast are blessed with something like 48 inches of rainfall a year. This seems like a lot of water. It is, but much of the water that falls runs right back down the streams and into the ocean. This water just might as well never have fallen for the good it does for crops.

Here in South Carolina we have an average of 6 droughts per year. These droughts are not like the drought that we have suffered from this summer, but they are, nevertheless droughts that can do damage to our crops.

What are some of the ways that we can conserve this 48 inches of rainfall we get per year and prevent these six droughts.

First, if we have cover crops, practice contour farming, etc., we can make the water stay longer on the soil and give it a chance to percolate down into the soil.

Secondly, and apparently a must, we must find some system of storing an abundant supply of water for use in supplementary irrigation. The answer to this is apparently the construction of any water-type reservoir that is possible to construct on your farm. Some of these are dry-

land ponds, ponds on small streams, and possibly someday, government sponsored lakes might well supply our need for water.

During the dry summer of 1951, there was an irrigation experiment carried on at Clemson for the purpose of comparing yields between an irrigated plot of corn and one that was not irrigated. One plot received irrigation once during tasseling time. This plot made 72 bushels per acre while the non-irrigated plot right beside it made 16 bushels of small defective corn. In 1953 the irrigated plot under the aforementioned conditions made 61 bushels per acre while the non-irrigated plot produced 27 bushels per acre. Out of the 6 years that irrigation experiments on corn have been conducted at Clemson, a decided gain has been found during 5 of those years.

As the population of the U. S. increases each year the need for food and fiber grows by leaps and bounds. As this responsibility of increased production faces us we must find some way to stop these droughts that plague our state and the country as a whole if we are to keep our present high standard of living. This problem of the drought is ever staring us in the face and the solution must be worked out or we will continue to suffer the drastic consequences.

Hours 11:00 a.m. — 12:00 p.m.



DAN'S

For the BEST in
Hamburgers and all
types of Sandwiches

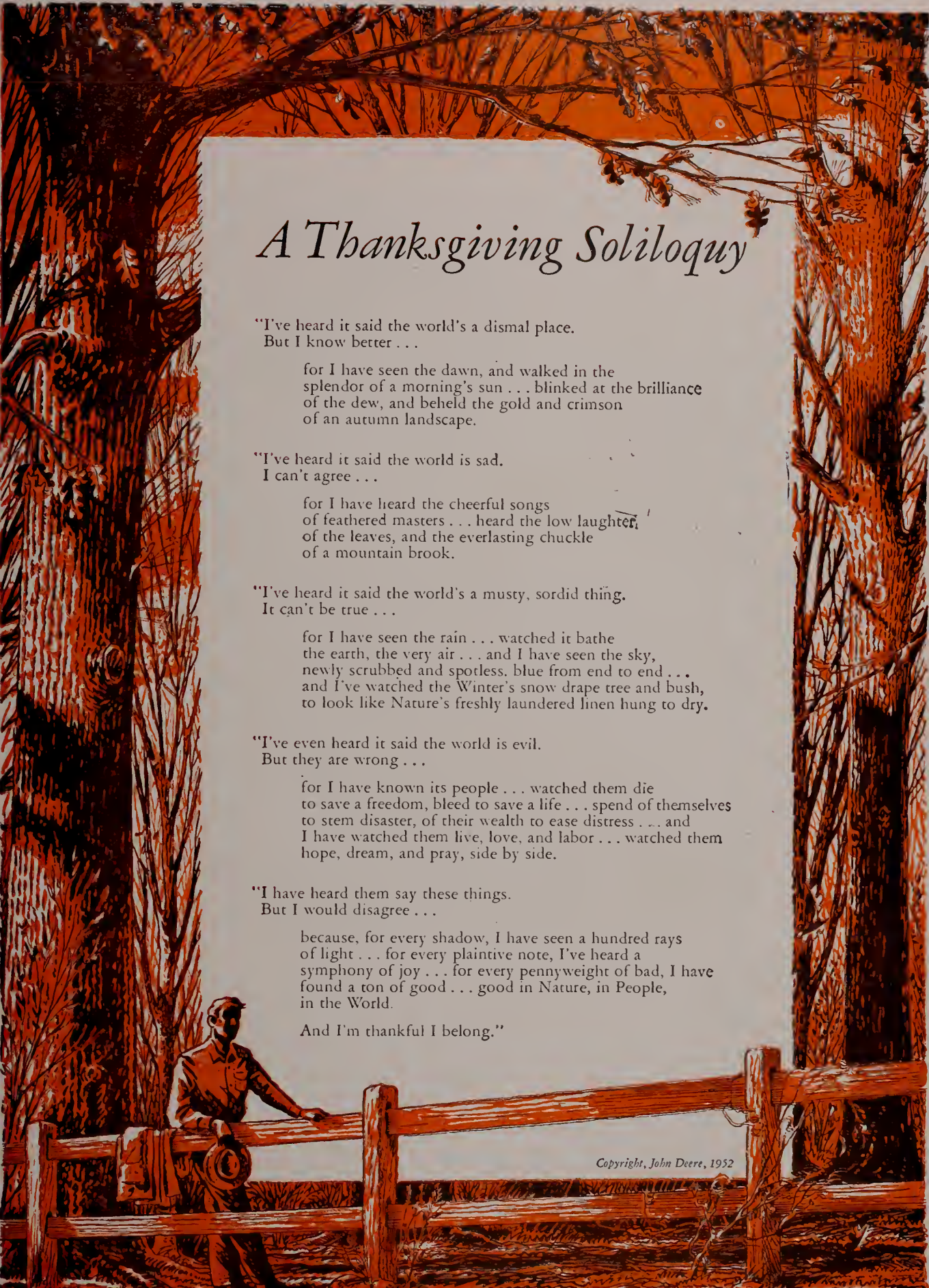
TURNERS
GULF SERVICE
QUALITY AUTO SERVICING
AND REPAIR



For Our Courtesy
There Is No Extra Charge



LOCATED ON SENECA HIGHWAY

An illustration in a monochromatic orange-brown style. It depicts a man in a shirt and trousers leaning against a rustic wooden fence. He is holding a hat in his left hand. The background is filled with the intricate, leafless branches of trees, suggesting an autumn or winter setting. The entire scene is framed by a thick, dark border.

A Thanksgiving Soliloquy

"I've heard it said the world's a dismal place.
But I know better . . .

for I have seen the dawn, and walked in the
splendor of a morning's sun . . . blinked at the brilliance
of the dew, and beheld the gold and crimson
of an autumn landscape.

"I've heard it said the world is sad.
I can't agree . . .

for I have heard the cheerful songs
of feathered masters . . . heard the low laughter
of the leaves, and the everlasting chuckle
of a mountain brook.

"I've heard it said the world's a musty, sordid thing.
It can't be true . . .

for I have seen the rain . . . watched it bathe
the earth, the very air . . . and I have seen the sky,
newly scrubbed and spotless, blue from end to end . . .
and I've watched the Winter's snow drape tree and bush,
to look like Nature's freshly laundered linen hung to dry.

"I've even heard it said the world is evil.
But they are wrong . . .

for I have known its people . . . watched them die
to save a freedom, bleed to save a life . . . spend of themselves
to stem disaster, of their wealth to ease distress . . . and
I have watched them live, love, and labor . . . watched them
hope, dream, and pray, side by side.

"I have heard them say these things.
But I would disagree . . .

because, for every shadow, I have seen a hundred rays
of light . . . for every plaintive note, I've heard a
symphony of joy . . . for every pennyweight of bad, I have
found a ton of good . . . good in Nature, in People,
in the World.

And I'm thankful I belong."

Copyright, John Deere, 1952

New filter cigarette!

WINSTON

brings flavor back to filter smoking!



**FINER
FILTER!**

**FINER
FLAVOR!**

**KING SIZE,
TOO!**

Winston tastes good—like a cigarette should!

■ Winston is the new, easy-drawing filter cigarette real smokers can enjoy! Winston brings you real flavor — full, rich, tobacco flavor. Along with finer flavor, you get Winston's finer filter . . . it's different, it's unique, it works so effectively! Winstons are king-size, too, for extra filtering action. Try a pack of good-tasting Winstons!



J. R. R. CO. & T. BACCO CO.,
WINSTON-SALEM, N. C.

WINSTON ...the easy-drawing filter cigarette!

AGRICULTURAL REFERENCE DEPARTMENT
CLEMSON COLLEGE LIBRARY

The Agrarian

OFFICIAL STUDENT PUBLICATION

SON, S. C.

THE CLEMSON A & M COLLEGE

JANUARY 1955



SERVING THE FARMERS
IN NORTH AND SOUTH
CAROLINA SINCE 1906



Planters
Fertilizer & Phosphate Co.

CHARLESTON, S. C.

CHARLOTTE, N. C.

THE AGRARIAN

Volume XIV

The Clemson Agricultural College

Number 2

Niles C. Clark, Jr.
Co-Editor

Bennie Wiggins
Associate Editor

Ray M. Buck, Jr.
Co-Editor

John D. Patrick
Advertising Manager

Chauncey D. Smith
Business Manager

Thomas E. Hayden, Jr.
Circulation Manager

E. J. Wright, Jr. Feature Editor D. B. Anthony News Editor
Walter Ramage Dept. Editor

Departmental Writers—

Reuel McLeod, Jr., Jack C. Langston, Fred McLaughlin, Jr., Clyde E. Woodall, Weston Weldon, Watt E. Smith, II, D. B. Anthony, A. G. Neil, Jr., Louis Philhower, Richard F. Elliott, M. I. Fralick, Robert Donaldson, Legare Walpole.

Advertising Staff—

Louis D. Parsons.

Circulation Staff—

Edward Corley, Earl Little.

Advisory Staff—

B. E. Goodale, T. L. Senn, James K. Henderson (Student Advisor)

THE COVER: The American farmer is faced with an ever-present problem of conserving his soil. This problem is becoming more important as our rapidly increasing population requires more food. This picture taken in the western part of South Carolina shows many soil conservation methods in practice. Read Legare Walpole's article on land use problems on page eighteen. (Photo courtesy of S. C. Extension Service)

IN THIS ISSUE

Sheep	Page 3
So You Want a Farm	Page 4
Opportunities for Ag Grads	Page 5
Can You Feed Molasses Economically?	Page 6
Too Wet for Haying in Britain	Page 8
Between the Furrows	Page 10
Farm and Home Week	Page 12
Why Landscape?	Page 13
The Men Who Guide Us	Page 14
Land Use and Soil Compaction	Page 18

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education, and sponsored by the South Carolina chapter of Alpha Zeta. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

AGRARIAN

PHILOSOPHY

Niles C. Clark, Jr.

Co-Editor

In past decades, the average farmer ranked very low on the social, economic, and political scales of human endeavor. He was a person who had very limited formal education, and who trusted to the customary farming practices, which had been used by his ancestors to bring forth meager harvests from his soil.

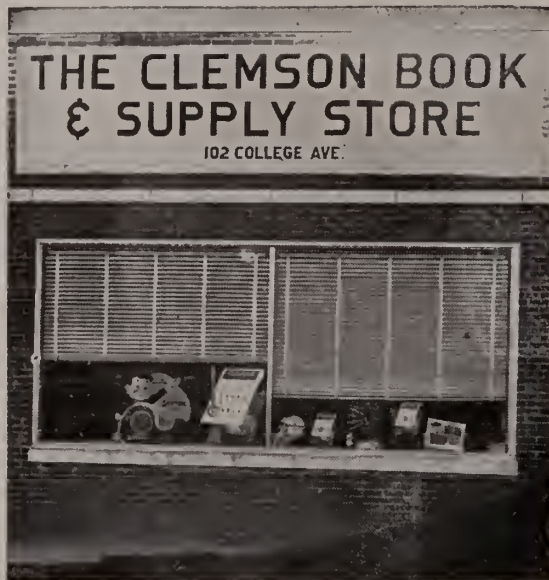
The picture has changed tremendously since this early time, and today's successful farmers are no longer thought of as the outcasts from other professions. Success in the farming profession today is correlated with management proficiency, salesmanship, business ability, and scientific knowledge. To fill these needs of modern agriculture, agricultural colleges and universities are spread across the United States and other countries. These institutions are succeeding in putting across workable ideas to the farm youth and are presenting, first-hand, new developments in the field of agriculture to students and farmers.

Thus, we need to study agriculture to get away from the antiquated methods and ideas that have so long prevented the advancement of sound principles in the world's agriculture.

Do you know the field in which you are going to work when you finish your education? Think about the decision that you have already made as to your future work. Irregardless of what it is, are you going to be happy? This is the main objective to seek in a vocation — not money, social prestige, or personal gain.

A Resolution

Let's begin this new year with a determination to take advantage of all our numerous opportunities to equip ourselves with the essentials necessary to make this world a better place to live — through agriculture.



Two familiar old faces always welcome
you back to the campus.

CLEMSON BOOK STORE
Official College Book & Supply Store

L. C. MARTIN DRUG COMPANY
Serving Clemson Men Since 1908

W. B. Camp & Sons, Inc.

Bakersfield, California

and

Gaffney, South Carolina

Buckfield Plantation

Yemassee, South Carolina

SHEEP - - -

for South Carolina Farms

R. F. Elliott, Jr., AH '56

South Carolina is one of the three smallest sheep producing states in the union. However, interest in sheep in the state is growing rapidly.

One of the major reasons for increased interest is the large combing company at Johnsonville which was constructed this year and which will provide a local market for wool. This is the first wool combing plant to be located in the South, where woolen spinning and weaving mills are being built at a rapid rate. The plant is now processing wool at the rate of about 20,000,000 pounds per year and will process about 80,000,000 pounds per year when it reaches peak production. At present the entire wool output from South Carolina's sheep would last this plant less than one-half day. The plant is now importing about two-thirds of its wool from Australia and other foreign countries.

In order to stimulate sheep production locally and at the same time improve the quality of wool produced, Mr. Arthur O. Wellman, president of the combing company, has recently imported 104 registered Australian Polwarth sheep from Victoria, Australia. They arrived in Johnsonville on November 1, 1954 after an 82-day journey. The sheep will be used experimentally by Clemson College at the site of the Combing Company to determine their adaptability to South Carolina conditions. The climate at Victoria is essentially the same as that at Johnsonville.

This is the first time Polwarth sheep have ever been shipped to the United States. These sheep are resistant to many sheep diseases, are large framed and produce exceptionally fine wool.

Two hundred and fifty western ewes have been shipped in from Texas to be distributed to farmers around Johnsonville where sheep interest is extremely high. One farmer is preparing to buy 1400 head and

many others will purchase around 500 head.

Because of the demand for research work with sheep in the Southeastern States, the South Carolina Agricultural Experiment Station is starting a six-year experimental project with 100 western ewes. The effect of selection, hormones, light, and temperature on the breeding performances and early lamb production of sheep will be studied.

The United States consumes about thirty per cent of the world's wool and produces only a small fraction of this amount. Wool was our largest import in 1951. Most of our imported wool comes from distances ranging from 6,000 to 12,000 miles. Economic experts predict that sheep production will increase markedly in the near future, and although the number of sheep in the United States has decreased in the last few years there has been a definite increase in sheep production in the Southeastern States.

Here are a few facts about sheep production:

1. Four sheep can be grown on the same area as one cow and the four sheep will produce better than one hundred dollars a year income.

2. Many grazing experts estimate that the live weight gain per acre could be increased from five per cent to ten per cent by grazing cattle and sheep together since sheep make use of many roughages that cattle neglect.

3. Sheep produce two crops each year—lambs and wool.

4. Returns come relatively rapidly. Ewe lambs can be bred to lamb as yearlings. Lambs are marketed young—at four to seven months.

5. Sheep are the only animals that can produce a prime product on forage alone.

6. Lambs will fatten on good pasture alone without any supplemental feed.

(continued on page 17)



Sheep can be fattened on good pasture alone.
(Extension Service photo)

So You Want A Farm?

THOUGHTS FOR CONSIDERATION

Louis Philhower, Ag. Ec. '55

There are several reasons why people may want to own a farm.

1. To supply opportunities for a full time occupation in farming.

2. To live in the country and work on a full or a part time non-farm job.

3. To live in the country.

Whatever the reason may be, the farm selected should fit the needs of the family whether it be for living or for a combination of farming and living.

In buying a farm let us not lose sight of the fact that the purchase of a farm is, for most people, one of the most important decisions they will ever have to make. The purchase is no small financial matter and, in addition to the financial aspect, there are social, religious and economic problems involved. For anyone who is inexperienced in farming it would doubtless be better to get started as a renter or a partner on a successfully operated farm.

Let us now consider the problem of acquiring a farm. Some people maintain that the best way to acquire a farm is to marry it or inherit it and this could easily be true with the present day high prices and the amount of capital required in most sections for a successful farming operation. However, before marrying a farm, make sure that you are getting the farm only as a bonus, and not as the sole purpose for the marriage. You will not have to live with the farm as closely as with the girl.

As to the matter of finance there are many different ways of acquiring credit. One of the major ways to get credit for buying a farm is through the local National Farm Loan Association which is a part of the Federal Land Bank System. A central bank is located in each of the twelve Federal Land Bank districts. The people running these banks understand the needs of a farmer or a prospective farmer.

They make long-term agricultural loans. Credit for production purposes may also be acquired at these same locations through The Production Credit Association. Both long and short term credit can also be obtained from local banks and from people in the community who have excess capital. In many cases, very satisfactory long-term loans can be had from these sources. Some who want to farm may also be eligible for loans through the Farmers Home Administration. It is important, if a farm is bought on credit, to arrange a repayment plan which is in keeping with prospective income and perhaps also to include some provision for temporary suspension of payment in the event of unforeseen circumstances.

Next, let us consider the social aspect. To some people, this may seem relatively unimportant but let us consider it and include in it educational facilities. In considering the farm, ask yourself some of the fol-

lowing questions and to these add some which might fit your particular situation. Do people of the community have the same social interest as you in regard to community organizations and community functions? Do their recreational interests coincide with yours? Are they on an equal plane with you in regard to educational interest and background? Does the community afford schools to properly educate your children both scholastically and socially? Each of these problems and many others should be carefully considered and weighed according to your particular situation and needs. Since all of us agree that religion is an essential part of happy living, let us consider the churches of the community and see that there is one in which we could attend and take an active part.

Also, there is the question of economics and this question is very important because it will determine
(continued on page 20)



A small farm may be a large capital investment.

(Extension Service photo)

Opportunities for Ag Grads

What's Ahead?

Elridge J. Wright, Jr., Agron '56

As an agricultural student, you should be interested in knowing all of the opportunities that lie before you when you graduate from college. In the field of agriculture, there are many different and varied occupations that you might choose from. These opportunities range from general farming to agricultural research in a scientific laboratory.

In general, the work of agricultural graduates may be classified in six rather broad fields. Farming, both general and specialized; agricultural extension service, including county agent work and extension specialists; research, especially work with the agricultural experiment stations; government regulatory work, such as plant inspection with the U. S. Bureau of Entomology and Plant Quarantine; teaching in college after appropriate graduate work is completed; and a host of occupations with commercial concerns, such as seed companies, meat packers, fertilizer companies, florists, canneries, hatcheries, commercial feed manufacturers, agricultural implement concerns, etc.

These six classifications are used to narrow down the great field of agricultural opportunities, but under each of these classifications, there exists an untold number of bright prospects for the agricultural student.

Here at Clemson College, there is offered in the curriculum, courses in Agricultural Economics, Agricultural Engineering, Agronomy, Animal Husbandry, Botany, Dairying, Entomology, Horticulture, Poultry, Pre-Forestry and Pre-Veterinary Medicine.

There are many varied opportunities to be found in any of these major courses, and each student should decide early in his college career just what aspect of his major course he is going to follow.

In the field of Agricultural Economics the student is trained whol-

ly or in part for farming; managing farms, appraising land, crop marketing activities; supervising agricultural loan departments in private institutions and other positions of economic concern to agriculture. Among other things, the Agricultural Economist may find a position directing farm loan associations affiliated with the Farm Credit Administration. The Agricultural Economist may operate numerous other enterprises where a knowledge of economic principles is an essential supplement to knowledge of the technical requirements of the business.

An Agricultural Engineering graduate has a wide selection of opportunities from which to choose. These opportunities include mechanized farming; research with state, federal and private agencies; sales, service, advertising and design of farm equipment and materials, and agricultural extension service with state and federal agencies. He can also enter into the phase of Agricultural Engineering dealing with soil and water conservation. In this phase of work, there are opportunities in land drainage and reclamation projects, and in irrigation which is now becoming very important. The Agricultural Engineer also has opportunities such as: rural electrification work with power companies, manufacturers of electrical equipment and the Rural Electrification Administration of the U. S. Department of Agriculture; and the private business such as farming, operating machinery dealerships and related lines of business.

The graduates in the field of Agronomy have many fields of opportunities from which to choose their occupations. The Agronomy graduate is probably better prepared for general farming than are the other agricultural graduates since his is a course that is designed principally to prepare him for scientific modern farming. Other oppor-

tunities that Agronomy graduates have are in soil conservation work, agricultural extension and experiment station work, and also as plant breeders, soil analysts, and crop specialists. Other positions include work with commercial concerns such as fertilizer companies, seedsmen, and manufacturers of certain food products.

Another large agricultural field today is the field of Animal Husbandry. In recent years this field has expanded and has provided jobs for many different people. Occupations for Animal Husbandry graduates include livestock farming, cattle and swine breeding, extension livestock specialists, feed specialists, County agents, agricultural teachers, research work in the animal industry, positions with meat packing companies, feed dealers, and livestock commission brokers.

A small, but important field of Agriculture is the field of Botany. The men in this profession work hand in hand with the men in the other fields of Agriculture in establishing better plants. Opportunities for Botany graduates include research work with state, federal, and private agencies, teaching in the biological sciences, industrial sales and demonstration representatives for companies manufacturing fungicides and herbicides, positions as plant pathologists in nursery, orchard and food inspection as well as pathologist-plant breeders with seed companies and other research agencies.

One of the most important agricultural fields that provides thousands of jobs each year in the U. S. is the Dairy industry. Opportunities for Dairy graduates here at Clemson include dairy farming, dairy plant management, dairy herdsmen for large breeding companies, ice cream manufacturing, laboratory and technical work in dairy plants, milk in-

(continued on page 13)

Can You Feed Molasses Economically?

RESULTS OF DAIRY EXPERIMENTS

M. I. Fralick, Jr., Dairy '56

Blackstrap molasses for feeding purposes is a by-product from the manufacture of cane sugar. Blackstrap molasses, also known as "cane molasses" or "feeding cane molasses," is the residual material remaining after as much sugar as practical has been crystallized from the purified and condensed cane juice.

Blackstrap contains approximately 54% total digestible nutrients, which is composed almost entirely of sugars. Because of the action of blackstrap in slightly lowering the digestibility of protein in the ration, it is rated as having no protein value even though it contains a small percent of protein. This fact makes it important that ample protein be supplied by the other parts of the ration. The nutritional value of blackstrap molasses can be better visualized by comparing it with corn, which contains 80% total digestible nutrients and 6.6% digestible protein. Considering only the amount of total digestible nutrients in these two feeds, blackstrap is worth approximately 70% as much as corn, pound for pound.

The feed shortages caused by the drought condition in 1952 and 1953 stimulated considerable interest in the feeding of blackstrap molasses to cattle. Dairymen plagued by severe drought again this year will, of necessity, be searching for outside sources of feeds. Molasses has long been recognized as a desirable carbohydrate concentrate for dairy cattle. Experiments were carried out by W. A. King and J. P. LaMaster of the Clemson Dairy Department during the winter of 1952-53 to study further the value of molasses in the ration of dairy heifers and milking cows.

Yearling heifers, between the ages of nine and fifteen months were divided into three groups. Group 1, the control group, was fed corn silage and 2 pounds of cottonseed meal per heifer daily. Group 2 was fed corn silage, molasses free choice, and 2 pounds of cottonseed meal per

heifer daily. Group 3 received corn silage, 4 pounds molasses poured on the corn silage and 2 pounds cottonseed meal per heifer daily. In all cases the corn silage was fed free choice in long out-of-door bunkers. In addition trace mineralized salt in blocks and bone meal or dicalcium phosphate were fed free choice in mineral boxes.

The three groups, each containing thirty-seven yearling heifers, were fed their respective rations for eighty-four days. The control heifers, group 1, were the slowest gainers, with a daily average of 1.42 pounds. Group 2, fed molasses free choice, gained 1.69 pounds daily. The average blackstrap consumption for group 2 was 5.85 pounds daily per heifer. When molasses consumption was limited to 4 pounds per heifer daily, as in group 3, the daily average gain was 1.80 pounds. Group 3 outgained all other groups and at the lowest daily cost. The highest daily cost was in group 2, fed molasses free choice.

The live weight gains of the heifers were satisfactory in all groups.

The heifers fed molasses showed no symptoms of digestive disturbances, and appeared to have no difficulty in adjusting themselves to eating molasses in a trough.

Studies were also made with heifers of breeding age. The experiment was conducted from December 4, 1952, to March 25, 1953. At the end of each 28-day period the heifers that were found to be safe with calf were removed from the experimental groups. The average daily gain of each heifer was also determined at the end of each 28-day period. There was an average of 86 breeding age heifers in the experiment.

The molasses was fed free choice from a trough made from a 55-gallon steel drum cut in half lengthwise and mounted on a stand 30 inches high. The average molasses consumption was 5.25 pounds per heifer daily. The results of the feeding trial were favorable. The breeding age heifers average daily gain was 1.42 pounds, and their condition was excellent at the end of the experiment.

(continued on page 16)



Feeding tank being filled by gravity flow.



MT. VIEW MILLING CO.

Manufacturers
of
High Grade Feeds

USE OUR PRODUCTS AND HELP
CONSUME LOCAL GRAIN

PHONE 532 SENECA, S. C.



Hours 11:00 a.m. — 12:00 p.m.



DAN'S

For the BEST in
Hamburgers and all
types of Sandwiches

TERRY BOTTLING COMPANY



Pepsi-Cola

Toms Flavors

Seven-Up



ANDERSON AND
GREENWOOD



ROPER MOTOR COMPANY

FORD DEALER

Sales and Service

EASLEY, S. C.



Too Wet for Haying in Britain

International Farm Youth Exchange Delegate Reports on Observations

By Fred McLaughlin, Jr., A.H. '55

Yes, the British farmer will tell you that he has been able to harvest only one-fourth of his normal hay crops due to an abnormal excessive amount of rainfall this past year. It seems as if our problem is quite the contrary here in South Carolina. In a normal year, Britain gets about the same amount of rainfall as our state, which is 46 inches average per year. Their rainfall is more evenly distributed than our state's. When they get a rain it's always a slow, misty, and drizzling rain, never a hard, washing downpour like we get. This is very good and bad to their farming problem. In the good aspect, the farmers are able to produce yields that will surpass ours by a large margin. For example, a farmer thinks nothing of producing 95 bushels of oats per acre, whereas if a South Carolina farmer makes this kind of yield, he likes to let the other farmers know about it. In the bad aspect, the farmers are not able to allow their cattle to graze during the winter months to any great extent, because the pastures are too wet. We can get 9 to 11 months of grazing in South Carolina and the British farmer gets only 6 to 7 months per year that the cattle are able to stand up in the pastures without bogging to their knees.

The British farmer has always been proud of his purebred stock and careful crop husbandry. Now he knows that, as never before, the country depends on him for greater output and efficient methods in every branch of his work, and he is proud to show how well he is living up to the nation's expectation.

To understand the farmer's achievements, and his problems, a visitor must see a typical farm. The average size of farms in England and Wales is around 100 acres; in Scotland and Northern Ireland it is smaller. Only one operator in twenty has more than 300 acres, but these

larger farms account for almost a quarter of the nation's farming acreage.

On a farmer's 100 lowland acres he probably has thirty-five to forty acres under cultivated crops, with the rest in hay and pasture. Cereal grains constitute more than half the crops; a quarter is potatoes, sugar beets, turnips, cabbage, and kale; and the rest one or more crops like peas, beans, fruits, vegetables, or flax. He feeds his livestock a large part of the oats and barley, and all the hay, turnips, cabbage, and kale, in addition to a small amount of imported feedstuffs. The rest of the crops he sends to market.

His livestock would include 10 to 12 dairy cows; around 20 calves, dairy heifers, and fattening steers; maybe 2 or more breeding sows or a dozen fattening hogs; possibly a small flock of breeding ewes; and anywhere from 60 to 300 chickens.

This could be considered a typical farm in a particular section of Britain, but the enterprises vary with the soil type and topography as they do even in our state. Take for example, a farmer in the West Highlands of Scotland wouldn't produce field crops to any great extent. He would grow enough crops to provide food for his family consumption and his main interest would be centered around the production of wool.

It is not too much to claim that Britain has played the leading role in the development of modern farm livestock, and is still the stud farm of the world.

Of the twenty breeds of cattle, sheep, swine, and farm horses of world-wide reputation, all but six originated in Britain. Most of the breeds of cattle and sheep in the United States and Canada, as well as some of the pigs, trace their ancestry to Britain.

The three most popular breeds of cattle in North America, the Hereford, the Shorthorn, and the Aberdeen Angus, all originated in Britain; they are also the most popular breeds in Britain today.

From the point of view of animal health, Britain is fortunate in being an island. Serious epidemic diseases which have at times devastated the herds of her continental neighbors, have long been excluded. But, in a country which imports so many animal products, strict quarantine precautions are necessary, and even the most elaborate do not always succeed. Rare outbreaks of hoof and mouth disease are promptly stamped out by drastic slaughtering and burning, with Government compensation to the affected farmer.

The world's first agricultural experiment station (and still one of the most famous) was Rothamsted in Hertfordshire, developed in the middle years of the last century by John Lawes, who "invented" superphosphate, and in so doing made enough money to finance the center. At Rothamsted the foundations of modern fertilizer practice were laid, the importance of soil micro-organisms first emphasized, and the possibilities of soil sterilization first exploited. Research into soil science is still carried on there, some of it by far on the oldest test plots in the world.

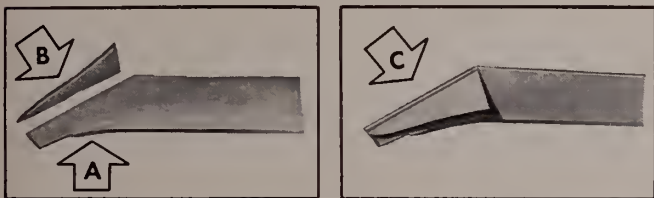
Britain's farms today are among the most efficient in the world. Not only are they highly mechanized and making better use of machinery every year, but their crop yields are high and steady, and their output per man-year equals that of both Canada and the United States. A careful system of soil conservation and crop rotation, built up over hundreds of years and now aided by the newest scientific experimentation, maintains and increases soil fertility, making possible the intensive use of land without robbing it.

A report to you about the **TEAMWORK** of men and machines that helps maintain International Harvester leadership

How automatic arc welding puts uniformly high quality into IH plowshares

In this age of modern science and research, it is significant that the plowshare—one of the oldest parts in farm equipment manufacture—is still being improved.

At International Harvester, research engineers and factory production men have teamed together to apply successfully the techniques of modern automatic arc welding to mass production assembly of plowshares. The result is a consistently uniform, high-quality product that always fits right, holds its shape, wears well, and enables the farmer to do a first-rate job of plowing.



Before welding (left), the plowshare blade (A) and gunnel (B) look like this. After being automatically welded (right), the two parts are joined like this (C), with a strong, consistently uniform weld. Shares are forged and heat treated after welding to give them proper shape and wearing qualities.

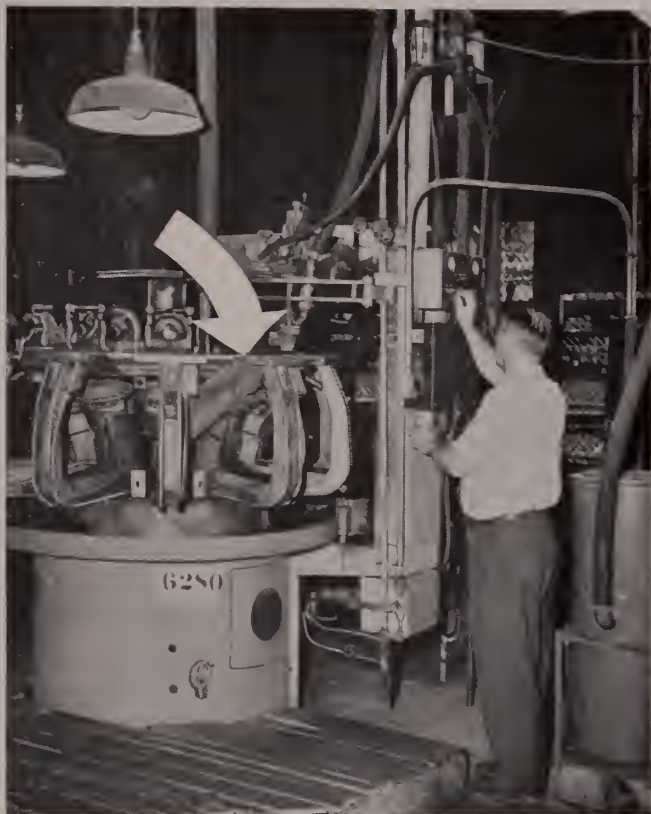
The common goal of IH research, design, metallurgy, field test engineering, and manufacturing is to improve the quality and performance of IH products, while keeping costs to a minimum. The result is product leadership that helps farmers everywhere reduce production costs and increase profits.

For more details, write for free engineering paper, "Automatic Arc Welding of IH Farm Equipment Parts." There is no obligation. Send postcard with your name and address to International Harvester Company, P. O. Box 7333, Chicago 80, Illinois.



INTERNATIONAL HARVESTER

International Harvester products pay for themselves in use—McCormick Farm Equipment and Farmall Tractors... Motor Trucks... Crawler Tractors and Power Units... Refrigerators and Freezers—General Office, Chicago 1, Ill.



After successful, coordinated development work between researchers and production men in the technique of application, the automatic submerged arc welding process is now a standard factory operation at IH's Canton, Illinois, Works in the mass production assembly of plowshares. This turret-type welding fixture has 10 "stations" where 10 plowshares at a time are automatically in process of being loaded into the fixture, welded, cleaned and unloaded. Arrow points to plowshare in position in one of the "stations." In this process, a carefully engineered combination of granular flux and welding wire is used to produce, rapidly, a uniformly strong weld—*automatically*.



Both IH customers and dealers benefit from the use of automatically arc welded plowshares. Consistently uniform quality in manufacture helps assure dependable performance in the field. This is one reason why McCormick® plows are first in favor with particular plowmen everywhere.



BLOCK AND BRIDLE CLUB NEWS

Speakers at Recent Meetings

Professor George B. Nutt, head of the Agricultural Engineering department, was the guest speaker at the regular meeting of the Block and Bridle Club on Tuesday, November 23, 1954. He discussed some facts dealing with the relationship of Animal Husbandry and Agricultural Engineering. In his talk he brought out the fact that many feed lots are now equipped with machinery that eliminates the hand labor once needed for cattle feeding.

At another recent meeting Dr. J. B. Pitner, head of the Agronomy Department, spoke on the feed production problems of animal production in South Carolina. He brought out the importance of irrigation as an insurance against the frequent short summer droughts which occur at a critical time in the growing season of most of the state's forage and pasture crops.

Members Attend Livestock Exposition

Freddie J. Rivers of Chesterfield and Robert C. McDaniel of Chester represented the Clemson Block and Bridle Club at the club's national convention in Chicago on November 29, 1954.

Freddie and Robert have been active club workers and were elected as delegates by popular vote of the club. They departed for Chicago on November 24 and attended the convention on Monday, November 29. Membership was one of the more important topics discussed at the business meeting. The Clemson Block and Bridle Club ranks sixth in new membership out of all the clubs in the nation.

Before returning they visited the International Livestock Exposition. At the Exposition they saw livestock judging, horse shows, and cattle from South Carolina which won top honors in several departments.

Also attending the International Livestock Exposition were Ray

Buck, Bill Ham, Walter Ramage, Jim Ulmer, Joe Hood, and Rick Godshall. Professor R. R. Ritchie, a past faculty advisor of the club and Dr. W. C. Godley were also present at the Exposition and attended a meeting of the American Society of Animal Production.

OFF-CAMPUS TEACHING

Beginning with the second semester of the 1954-1955 session, Clemson College will inaugurate an off-campus agricultural instructional program at two of its branch experiment stations where graduate students may complete part of their work toward the master of science degree. This new phase of instruction is being offered in response to requests from South Carolinians employed in agricultural professions and will be designed to fit their needs. Classes will be taught by branch station staff members who will organize and present the courses in cooperation with their respective department heads located on the Clemson campus.*

The two courses to be offered for the second semester of the current school year will be Horticulture 456—Truck Crops, to be taught at the Edisto Station, Blackville, and Entomology, to be offered at the Pee Dee Station, Florence. Although Clemson College operates additional branch stations at Charleston, Summerville, and Columbia, there are no immediate plans for similar work at these locations.

Enrollment in the off-campus program is restricted to students who qualify for admission to the Graduate School. Students interested in enrolling for the 2nd semester program were required to submit Graduate School applications no later than January 15, 1955. The teaching program at the Branch Experiment Stations for the first semester of the 1955-1956 session will be announced at a later date.

* The instructional program will be under the general supervision of Dr. J. W. Jones, Director of Agricultural Teaching.

DAIRY CLUB NEWS

The Clemson College Dairy Club holds its meetings on the second and fourth Tuesdays of every month. The purpose of this organization is to bring together students mutually interested in topics relative to the dairy industry and to inspire a livelier interest in academic work.

On December 1, 1954, the club met at the Clemson House and a dessert supper was served. For a project this year the club is sponsoring Preston the Magician on February 24 and 25. Everyone is invited to attend.

DR. STEPP HONORED AT MEETING

Dr. James M. Stepp, Professor of Agricultural Economics at Clemson College, was elected Second Vice-President of the Southern Economic Association at the annual meeting of that organization at Biloxi, Mississippi, November 19 and 20. At this meeting Dr. Stepp presented a paper entitled "A Summary of the Agricultural Policies of the United States." Dr. Stepp has been a member of the research and teaching staff of Clemson College since 1940, and is the author of a number of research publications dealing with rural industries and the industrial development of small towns and rural areas.

As Second Vice-President of the Southern Economic Association, it is Dr. Stepp's responsibility to promote and encourage membership in that organization. The membership of the association is made up largely of college and university teachers and research workers in various fields of economics in the general area that includes Maryland at one extreme and Texas at the other. The Southern Economic Association is a professional organization whose objective is to improve the level of economic teaching and analysis in the South.



HENDERSON WINS DAIRY AWARDS

James Kermit (Jimmy) Henderson, a senior majoring in dairying at Clemson, has recently been awarded the 1954 "Agricultural Leadership Award" by the Milk Industry Foundation in Washington, D. C. Jimmy is one of five boys throughout the United States to win the award of an expense-paid trip to the 47th annual convention of the Milk Industry Foundation and a cash prize of \$100. He is the first Clemson student to win this award. The convention was held the week of October 24, and he was presented the cash award during one of the meetings.

Jimmy also won the Borden Agricultural Scholarship which gives an annual award of \$300. This is awarded to the eligible Senior who has achieved the highest average grade on all of his college work preceding his senior year. Two or more Dairy subjects must have been included in his curriculum for a student to be eligible for this award.

POULTRY CLASS TAKES TRIP

On December 9 five students of the poultry grading and processing class took a trip to Gainesville, Ga., to J. D. Jewell's Poultry Inc. Here they toured the plant and saw the various steps in killing, cutting, government inspection, and packaging. They also visited the rendering plant where the by-products of the main plant are rendered into a protein supplement called chicken scrap. At the same plant feathers are rendered into feather meal which may become a protein feed supplement. The class also visited Georgia Eggs at Athens which is a farmer's cooperative egg market. While in Athens a tour of the new veterinary building was made. The first class of S. C. boys at the University of Georgia, most of whom are former Clemson students, will graduate this June. All on the trip thoroughly enjoyed visiting with all former classmates who are now studying veterinary medicine.

AGRONOMY MEN ATTEND MEETINGS

Dr. W. B. S. Boykin and Mr. E. S. Stuart of the Agronomy Department attended the meeting of the Southern States Phosphorous Work Conference at Blacksburg, Va. The meeting was held on November 30 and December 1. Dr. Boykin and Mr. Stuart presented results obtained at Clemson with nitric phosphate.

South Carolina was well represented at the meeting of the American Society of Agronomy which was held at St. Paul, Minnesota, on the eighth through the twelfth of November. The men from Clemson who attended were Dr. J. B. Pitner, head of the department; Dr. W. R. Paden, an agronomist with the experiment station; Dr. J. W. Jones, Director of Agricultural Teaching; Dr. H. G. Albritten, an agronomist with the experiment station; Mr. O. W. Beale and Dr. T. C. Peele, Soil Scientists; and Dr. C. M. Jones, Associate Professor. Dr. Alfred Manwiller, associate plant breeder in charge of corn breeding at the Pee Dee Station at Florence also attended.

CLARK WINS TRIP TO CHICAGO

Niles C. Clark, Jr., an Animal Husbandry Senior from Waterloo recently represented Clemson in a market study which was held in Chicago and sponsored by Swift and Company. Niles won the trip by submitting the winning essay on the nation's livestock business — from producer to consumer.

A study of the marketing of livestock and livestock products comprised the major portion of the program. Among the activities were a tour through the stockyards with Swift livestock buyers, a visit in a wholesale meat branch house, a study of factors affecting nationwide daily livestock prices, and a general consideration of the packers position in the nationwide livestock business.

Twenty-nine boys from as many states were represented in the market study. The contest winners lived at the Midland Hotel during the study and made daily trips to the

stockyards and the general offices of Swift and Company. The study lasted from December 5 through December 8. Several of the winners remained through the 9th for a brief tour through Chicago and visited Don McNeill's Breakfast Club which is televised, the Chicago Board of Trade—a grain exchange, and the Museum of Science and Industry.

ALUMNI NEWS

Major T. S. Strange, Dairy '35, is in the Air Force at Maxwell Air Force Base, Montgomery, Alabama.

Gene Mathis, Poultry '52, is now the turkey specialist of the state and is also the proud father of twins.

L. L. Benton, Agronomy '23, is now the assistant county agent of Horry County.

Richard R. Baskin, Dairy '48, now holds the position of assistant Manager of the **Traipe County Dairy Cooperative**, LaGrange, Ga.

D. K. Fricke, Dairy '52, has moved from Greenville, S. C., to Birmingham, Alabama, where he is employed by the **White Dairy**.

William T. Derieux, Poultry, is home from Walter Reed Hospital where he was placed after being wounded in the Korean War.

J. J. Pitts, Agronomy '41, is a Soil Scientist with the Soil Conservation Service at Florence, S. C.

R. F. Elrod, Dairy '52, is now a dairy farmer in Piedmont, S. C.

H. H. Lewis, Jr., Dairy '52, now holds a position with **Sealtest Dairies**, Washington, D. C.

R. E. O'Brien, Agronomy '52, is now farming in Eutawville, S. C.

Major M. B. Edens, Dairy '47, has been reported as missing in action on the Manchurian Border.

Lt. T. R. Hawkins, Dairy '53, is now on a tour of duty in the Army at Fort Benning, Ga.

J. G. Reamer, Agronomy, now holds the position of District Manager of **Armour Fertilizer Works**, Atlanta, Ga.

J. B. Garrison, Jr., Dairy '53, has recently been made Breeding Technician for the Artificial Breeding Association of Greenville County.

Farm and Home Week

AN EDUCATIONAL EXPERIENCE

By Weston "Bird" Weldon

During the week of August 16 through the 20th, the thirteenth annual Farm and Home Week was held at Clemson College. This occasion was first known as Farmers' Week from 1925 to 1950. (There was only one year between the period of 1925 to 1950 that Farmers' Week was not held.) Seeing the need to change the title of this vast and growing occasion in 1951, the officials called it "Farm and Home Week." The attendance at earlier meetings in the late 20's was only a few hundred people but this year brought forth a record breaking crowd estimated between ten and fifteen thousand people.

Dormitory facilities were completely filled near the beginning of the week. There were several hundred families that had to be turned away due to lack of adequate facilities to accommodate them because of uncompleted dormitories. College officials were very regretful for this situation.

A man and his wife traveled

all the way from Greensboro, North Carolina, just to see some particular dairy equipment which the man was interested in. This couple tried to find a place to stay everywhere around here and the facilities were full. A Clemson man taking pictures spoke up readily and said that he was taking care of a prefab for his buddy while he was away for the summer. He stated that if this couple would like to spend the night there, that it would be perfectly all right with him. The Clemson man said that he thought \$3.00 would be enough to charge, but this young dairyman gave him \$7.00. The next morning the young dairyman returned to the big tent, and purchased 2 silage handling machines from the Jamesway Manufacturing Co.

A friendly atmosphere of good band music was supplied by the Parris Island Marine Band. This band has played for every Farm and Home Week except two. The music seemed to pep up the young and old alike from a hard day's lecture of various

discussions on many farm projects.

The appearance of Andy "The Big Orange man" Griffith was a sight in itself to see and hear. His poise and expressions have gained for him national recognition in the entertainment field. Mr. Griffith is a graduate of the University of North Carolina.

South Carolina should be proud of the superb talent which appears at the annual 4-H State Talent Show. This talent show has been one of the outstanding events during farm and home week. Tap dancing, string bands, individual instrument playing, and singing have always appealed to the listening ears of our southern folks.

There was approximately one and one half million dollars worth of farm machinery and appliances on display during the annual event. The big tent on Bowman Field had a length span of 475 feet. Money for many exhibits was not spared in the least by our leading manufacturing concerns. Actual farm machinery demonstrations were carried on by dealers out on the college farms. An item which caught many farmers eye was the new method of power steering which has been added to a certain brand of farm tractor.

Thursday's program was highlighted by the appearance of Miss Miriam Stevenson, "Miss Universe." Miss Stevenson had the honor of christening a new variety of watermelon. This melon was given the name of "Charleston Gray." This melon was developed at the Southeastern Research Laboratory at Charleston, by the USDA and agricultural experiment stations of 13 Southern States, including South Carolina.

The Rural Church Conference brought a close spiritual binding between our farm homes and the country churches. The general theme was "The Mission of the Rural Church." The Reverend G. Ross Freeman made a talk on "Fitting the Church into the Community."

The Clemson Dairy Department put a new brand of cheese on the
(continued on page 20)



One of the numerous demonstrations held throughout the week.
(Extension Service photo)

Why Landscape?

HOME GROUND BEAUTIFICATION

Robert J. Donaldson, Jr., Hort. '55

The purpose of landscaping is to get the maximum beauty, practical use, and enjoyment from available outdoor space. The necessity for proper planning of outdoor areas is becoming quite a problem to many families living on lots of medium to small sizes and in smaller houses.

Properly-designed home grounds, large or small, can provide facilities for uncrowded outdoor living. Wide ranges of variety in ornamental plant material can provide privacy as well as attractive surroundings for work or play.

Today when many small houses are being built, we should realize that small properties have many advantages for home ground design. With less area to be covered, each phase of the development can be more intensely planned and executed.

A successful design for a small area must necessarily take advantage of every feature of the site. Space must be organized carefully so that gardens, lawns, work areas, terraces, etc., will not be overcrowded.

Size, shape, orientation of the property, the style of the house, and its position on the lot are factors that influence the plan or design of the grounds. Frequently, a condition which seemingly is a problem,

will open the way to an attractive and unusual design. Other conditions affecting the design to be followed are existing features such as trees, shrubbery, outcropping rocks, buildings, changes in grade, and exposure to the elements.

It is surprising to know the large number of useful and attractive features that can be worked into comparatively small home grounds if planned properly. Such details as gardens, pools, arbors, steps, walls, tool houses, play equipment, and outdoor grills should be considered in advance, and then, when practical, they can be installed in their proper places in the overall plan.

The gardener who enjoys a variety of plants and has an affinity for collecting must indeed plan carefully to avoid overcrowding. Plants should be grouped into separate gardens, beds, or borders which are located in a logical order to one another, the house, and other structures on the property.

Lack of organization causes much space to be wasted. Also, features which would otherwise be attractive are scattered ineffectively and problems of maintenance are greatly increased. Consider the many examples of unattractive properties which surround us. Generally, these grounds have been developed in a sporadic, unorganized manner with

no thought for an overall design. Several plants placed around a house does not make it landscaped. Usually this type of grouping does little to improve the appearance. The most expensive mansion looks awkward when surrounded by too few, too many, or a helter-skelter arrangement of plants.

Proper design is the answer to effective landscaping. Start out with a design in mind. Do not allow the detail of the design to discourage you from having home grounds complete in every respect. Make no small plans. Plan completely and then carry out the development in a gradual, orderly way that will not be too costly at any one time. Only in this way can one accomplish the ultimate purpose of landscaping — the beautification of the grounds that surround our homes and other buildings.

OPPORTUNITIES FOR AG GRADS

(continued from page 5)

speciation work, dairy extension specialists, dairy research work with the state, and many other jobs connected with the dairy industry.

The Entomology graduates also have numerous opportunities even though their field is not as large as some of the others. Many Entomology graduates enter federal service with the U. S. Bureau of Entomology and Plant Quarantine as research men or as inspectors. Others enter positions in teaching, research and extension staffs of the several State Colleges and Universities. Many of the graduates find work with the various insecticide companies.

Another field that has bright prospects is the field of Horticulture. The graduates have opportunities which include vegetable and fruit farm management, landscape gardening, fresh fruit and vegetable inspection, plant breeding, agricultural extension service, experiment station research, and food canning, freezing and dehydration. These graduates

(continued on page 14)



A well-planned farm home.

(Extension Service photo)

The Men Who Guide Us

By A. G. Neil, AH '55

VIRLYN A. BOYD

Professor Boyd was born in Villa Rica, Ga., attended and graduated from Berry College with a B.S.A. degree in 1941. He received his M.S.A. degree from the University of Kentucky in 1948.



Professor Boyd has been teaching at Clemson since 1948. He teaches Rural Community, Advanced Rural Sociology, Rural Leadership and Farm Movements. Mr. Boyd lives in Pendleton.

JAMES D. BOYKIN

"Jim" is from Georgetown, S. C., attended and graduated from Clemson Agricultural College with a B.S. degree in 1950. He received his M.S. degree from Clemson Agricultural College in 1954 and has done gradu-



ate work at the University of California at Los Angeles and at the University of Southern California.

Mr. Boykin has been teaching General Zoology Lab, Animal Physiology, Protozoogy here for five years.

DR. W. B. S. BOYKIN

Dr. Boykin was born in Boykin, S. C., attended and received his B.S. degree from Clemson Agricultural College in 1950. He received his Ph. D. from the University of Wisconsin in 1954.



This is Dr. Boykin's second year teaching. He teaches Field Crops and Soils Lab.

He is a Sunday School Superintendent at St. Paul's Episcopal Church in Pendleton.

OPPORTUNITIES FOR AG GRADS

(continued from page 13)

also may work with florists, seedsmen, fruit products companies, fertilizer companies, fungicide and insecticide manufacturers and dealers, and spraying and dusting equipment manufacturers and dealers.

One of the fields that has expanded tremendously here in the South in the last few years is the poultry industry. Poultry graduates have the advantage of going into a rapidly expanding field which is becoming highly important so far as income is

concerned. Poultry graduates have opportunities as poultry farm operators, hatchery managers, sales and servicemen with feed manufacturers and poultry equipment concerns, poultry research workers and extension agents.

One of the two preparatory courses given in Agriculture at Clemson is the Pre-Forestry course. The students who complete the two year preparatory course are qualified to transfer to any of the major forestry institutions in the country. Opportunities for work exists on national forests, state forests, and large pri-

vate timber lands in technical administrative capacity. Those graduates who have training in forest products are also in demand in pulp and paper mills and laboratories and in the mills and developmental laboratories of the larger lumber, plywood and furniture companies in this region and throughout the United States.

The other preparatory course offered in Agriculture is the course in Pre-Veterinary Medicine. The students who complete the two year course may be qualified to enter the

(continued on page 18)

VAN LOTT, Inc.

430 Meeting St. West Columbia, S. C.

Distributors of

IRRIGATION EQUIPMENT

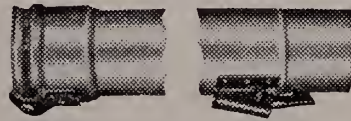
WEBSTER PIPE

JAEGER PUMPS

RAIN BIRD SPRINKLERS

BERKELY PUMPS

G. M. DIESELS



WEBSTER PIPE CONNECTIONS

Big Oak Ranch

BRAHMA — HEREFORD — ANGUS
CROSSES

and

Registered BRAHMAS and HEREFORDS

Mt. Pleasant, S. C.

Ray M. Buck, Owner

CAN YOU FEED MOLASSES ECONOMICALLY?

(continued from page 6)

Can molasses be economically fed free choice to milking cows? From January 15 to April 8, 1953, feeding trials were conducted with 8 pairs of selected milking cows to answer this question. One of each pair of milking cows was put in a control group, and the other cow of each pair was placed into the group to be fed molasses.

At the beginning of the experiment both groups received all the corn silage they would consume, and the cows in group 2 received molasses free choice. A 20% protein mixture of corn, oats, cottonseed meal and minerals was fed to the control group at a rate of one pound per 3.4 pounds of 4% fat-corrected milk (FCM) produced. The cows of the molasses group received a 41% total crude protein mixture of cottonseed meal and minerals at the rate of a pound per 6.8 pounds of 4% fat-corrected milk produced. The molasses fed to this group was to replace one-half of the concentrate.

It was found that the cows receiving molasses free choice would not balance their ration satisfactorily. The molasses consumption during the first 8 days averaging 19.7 pounds daily per cow, while silage consumption dropped from 90 to 30 pounds daily. In an attempt to make the cows adjust their molasses consumption, alfalfa hay was fed at a rate of 7 pounds daily per cow. The hay was fed to both groups and the per cent protein of the concentrates were lowered because of the protein provided by the hay. The desired effect was not obtained. The cows continued to increase molasses consumption reaching an average of 26.9 pounds per cow daily. Their milk production dropped sharply. On the fifteenth day of the experiment it was decided that molasses could not be economically fed free choice, and it was limited to 9 pounds per cow daily.

For the remaining 70 days of the feeding trial, the limited feeding of molasses proved satisfactory, with milk production almost completely returning to normal. For the entire experiment the average milk production of the control group averaged 37.2 pounds per day on a 4% butterfat basis compared to 35.1 pounds for the molasses group. The

control group produced 6.0% more milk. Analysis of variance showed that this difference was not significant. The feed cost per 100 pounds of milk calculated to a 4% butterfat basis averaged \$3.07 for the control group and \$3.17 for the molasses group.

Coming back to the question, should molasses be fed free choice to milking cows, the results from this experiment indicate that it should not. When molasses consumption is limited, under normal conditions it can be used to replace part of the concentrate.

The Dairy Department at Clemson continued for a second year the study of the value of blackstrap molasses in dairy cattle rations. Two feeding trials were conducted for 70 days each with three groups of milking cows.

Results were in favor of using molasses as part of the concentrate. The average production of group 1 (control), to which no molasses was fed, was 33.1 pounds of 4% FCM per cow daily. Group 2, with molasses used as one-fourth of concentrate, had a production average of 36.9 pounds of 4% FCM. Group 3, with molasses used as one-half of concentrate, had an average daily production of 33.3 pounds of 4% FCM.

The cost of producing 100 pounds of 4% FCM was \$2.70, \$2.37, \$2.57 respectively. Most economical production was obtained from the cows in which 4 pounds of molasses was used as one-fourth of daily concen-

trate. Even in group 3, with 8 pounds of molasses serving as one-half of daily concentrate, more economical production was obtained than when no molasses was fed.

Each group consumed approximately the same amounts of TDN daily. The percent protein in the concentrate was in proportion to the molasses fed so that each group received very nearly the same amount of protein. The consumption of corn silage, the only roughage fed, averaged close to 100 pounds in each group. The molasses was fed by pouring it over the corn silage.

More favorable results for the feeding of molasses were again obtained in the second feeding trial. The same groups of animals were used. The average daily production of the group not fed molasses was around one pound more than the two groups fed molasses, but the cost of production was slightly higher. The cost of producing 100 pounds of 4% FCM was \$2.60 for the control group, \$2.55 for group 2 with molasses replacing one-fourth of energy concentrate. Unlike the first trial, the cost of production in this case was lowest for the group receiving 8 pounds of molasses daily as one-half of concentrate.

Feeding trials with yearling heifers were also continued a second year. The purpose of this trial was to determine the value of molasses containing urea and ammoniated molasses. These two non-protein nitrogenous compounds can be util-



Power take-off operated feedin gequipment in action.

ized to some extent by the ruminants through the action of the bacteria normally found in the rumen. The bacteria convert the non-protein nitrogen into protein that can be used by the animal.

Three pounds of molasses containing 5% urea and three pounds of Molatein (the ammoniated molasses) were fed to yearling heifers of group 2 and 3 respectively. This feed was used to replace one pound of the cottonseed meal.

The heifers of group 2 made a 1.44 pound average daily gain and those of group 3 a 0.92 pound gain. The gains of group 2 were satisfactory but not as good as those of group 1 (control). Group 1 received 3 pounds of molasses and 2 pounds of cottonseed meal per heifer daily without special nitrogen compounds added to the molasses. Molatein was not satisfactory as a source of protein for heifers. Cost per pound of gain was higher in group 2 than in group 1, and highest in group 3. Of the two non-protein nitrogenous compounds tested, urea gave much more satisfactory results. Urea is finding rather wide-spread use by commercial feed companies, but its use by a person not specially trained could be dangerous because of the harmful effects that occur if fed in too high amounts.

The source of the experimental data found in this article was mimeograph reports made by the Clemson College Dairy Department.

SHEEP FOR S. C. FARMS

(continued from page 3)

7. Sheep are easily handled and moved.

8. Equipment and shelter can be relatively simple and inexpensive.

9. There is always a good demand for mutton and wool as well as many by-products.

However, no livestock business is the proverbial "Utopia" and the sheep business is no exception to this rule. Sheep are naturally defenseless and must be protected from their enemies. In South Carolina the worst sheep menace is the sheep-killing dog. Sheep are also highly susceptible to both external and internal parasites. They must be kept in relatively dry pastures because foot-trouble may develop on wet muddy ground. Also sheep, in general, require more labor and attention than other livestock.

(continued on page 20)



Clemson
AAA *House*

In the foothills of the beautiful Blue Ridge Mountains, you'll find the Clemson House located in a unique setting — right on the campus of Clemson College. Here you will find all of the services of a great metropolitan hotel yet you will be far away from the noise of a large city. And you'll enjoy the beautifully landscaped grounds and the flower beds. The splendid accommodations and the excellent cuisine offered at the Clemson House are combined with warm friendly hospitality and fine service. The Clemson House is a gem among fine hotels, and the rates are almost unbelievably low. All rooms are air conditioned. Four dining rooms and the Tiger Lounge and Coffee Shop. There is swimming, fishing and golf nearby

FRED L. ZINK, JR., Manager

On East Edge of Clemson, S. C., on U.S. 78, 123 and State 28.

PENDLETON FERTILIZER

Issaqueena Feed

Cottonseed Products

Certified Cottonseed

Insecticides

PENDLETON OIL MILL

PENDLETON, SOUTH CAROLINA

LAND USE AND SOIL COMPACTION

Problems of a Growing Population

B. L. Walpole, Agron. '55

Today the American farmer is charged with feeding an ever-increasing population. It is highly important that farming no longer be a "hit or miss" proposition. It should be a success depending on higher output per unit with lower cost per unit; thus it is vital that the farmer should have a working knowledge of his most basic factor of production—the soil.

To achieve maximum sustained output from this soil two chief factors are necessary, understanding the land capability and proper land practices for each of the classes of capability.

The factors which determine the capability class (rated one through eight) are surface texture, permeability of the subsoil, depth of surface and subsoil, slope, wind and water erosion, and surface drainage.

Selections of proper practices are made from three standpoints. First, from the vegetative standpoint — should it be terraced, farmed on the

contour, ditched, or do gullies need controlling? From the standpoint of fertilizer and soil amendments what is the pH? What liming program should be followed? What is the best fertilizer to apply? Is it deficient in any minor element?

By sound land use, soil improvement, crop selection and farm management the American farmer will continue to meet the challenge of a growing population.

Compacted Soil

Soil scientists and agricultural engineers are beginning research on a relatively new soil problem — soil compaction.

Some believe that this soil damage may one day approach erosion as a major limitation on crop yields particularly on level productive soils with intensive cropping practices.

Perhaps you can better realize the problem of soil compaction by noticing the puddled paths on several new campus lawns. As long as this

hard surface is present no grass will grow. Compaction can also occur beneath the surface.

Usually the soil does not reach a hard "concrete" state but reaches a condition which retards air and water movement. Water stands on level fields which are compacted after every rain or if the field is sloping, the increased runoff increases the erosion problem. Also roots are retarded in penetrating these dense soils.

Compaction may be caused by livestock trampling, by equipment turning on row ends, and by too much use of heavy equipment particularly on heavier soils that are too wet to work. Good physical condition can be ruined in one season by working at the wrong time.

While it takes a long time to cure "compaction pans" it can be done. Perhaps the most important point is to avoid working and grazing soils that are too wet. Plan tillage operations so as to make fewer trips over the field. Use a rotation program that will improve tilth and that will increase organic matter. This organic matter will promote a population of beneficial soil microbes and earthworms.

Proper fertilization promotes a vigorous, loosening root growth. Deep tillage and other mechanical practices may help.

OPPORTUNITIES FOR AG GRADS

(continued from page 14)

University of Georgia Veterinary school. The veterinarian, like the other agricultural graduates, has varied opportunities. In addition to practicing Veterinary Medicine, many of them secure positions with the state and federal governments as livestock and meat inspectors.

The foregoing opportunities for Agricultural graduates are only a few of the many thousands that exist today. With so many different jobs to choose from, the Agricultural student should have no trouble finding an occupation that he will enjoy and also will pay well, financially.

Your Trade Mark

For Quality Hybrid Seed

Corn



Also . . .
Wholesale Producers and
Distributors of Cotton Seed,
Wheat, Oats, Soybeans,
Tobacco Seed, Lespedeza
and Crotalaria.

McNAIR'S
Yield-Tested Seed Co.

Laurinburg, N. C.

Rarely, if ever, has the imagination and ingenuity of farm youth had so fascinating a field as is opened up by the hydraulic controls used on modern tractors. With control valves at his finger-tips, and standard portable rams which will work wherever a hose will reach, there is almost no limit to the things that an inventive young mind can contrive.

Major applications, of course, are ready-made by tractor builders and specialty manufacturers. With the latest side-mounted mower for the Case "VAC-14" Eagle Hitch Tractor, two hydraulic cylinders provide instant adjustment of both cutterbar angle and height of inner shoe. And when a Case "200" side-rake is used for immediate windrowing, the built-in hydraulic cylinder of Eagle Hitch also adjusts raking height of the reel. The driver does two jobs at once, with three major adjustments under hydraulic control.

The same versatility of hydraulic power can be adapted to pull up posts, jack up machines or portable buildings, do most any task that takes precise control of mighty force. You can count on modern hydraulics to help fulfill your young ideas.

Hydraulics Hold Charm For YOUNG Ideas...



If you'd like to know just how hydraulics work, Case has a 15-minute movie, "Hydraulic Controls," on this fascinating aid to modern power farming which you can borrow. A companion booklet of the same title is yours to keep upon request. If you'd like to know about all the training aids that Case makes available, ask for catalog "Visual Aids to Modern Farming." J. I. Case Co., Racine, Wis.



CASE

Serving Farmers Since 1842

SHEEP FOR S. C. FARMS

(continued from page 17)

There are five types of sheep businesses: First, the herded commercial sheep business which is used in the West extensively. A full-time sheep herder is used instead of fences. Second, the fenced-range commercial sheep business. This method has a higher initial cost, but lower cost of operation. Third, the purebred sheep business, where the main income is from the sale of rams to commercial sheepmen. Fourth, the farm flock. In this system a small flock is managed with a farm. The size of the flock is variable but should not be less than thirty for profitable production. Fifth, the feeder-lamb business which is rather limited.

The farm flock method will be the most popular method in the Southeast where land area is the limiting factor. In some cases the fenced range method will be used where there is enough area to permit it. As our commercial flocks increase, there will probably be a large enough demand for rams to warrant purebred sheep production.

SO YOU WANT A FARM?

(continued from page 4)

your mode of living as well as a large amount of your activity. There are many types of questions to be asked here, some of them are as follows:

1. Is this farm suited to the type of production and to the enterprise in which we wish to engage? Certainly we would not try to grow

truck crops in a remote section of the Midwest nor would we try to grow wheat on the high-priced small farms of New Jersey. Make sure that there is a good market available for the crops you wish to grow and that the farm is well adapted to these crops.

2. What improvements will have to be made before the type of operation I desire can be put into effect and how much will these necessary improvements cost?

3. Is the soil capable of supporting the desired type of operation? Soil type, fertility and suitability can either make or break you. Therefore, they should be carefully studied and considered.

4. Is there enough rainfall to support the type crops you wish to grow or is there too much rainfall? Does it have a good distribution throughout the growing season? This matter of rainfall is very essential and is absolutely essential unless there is available irrigation water which can be obtained economically.

5. Is the climate suited to the growth of the crops you wish to raise and will it allow for the optimum growing conditions?

6. Is the size of this farm going to call for your full ability as an operator and manager? This is an important question because if you are going to be a full time farmer you want to be fully employed. Idle time is costly as it reduces income and your ability is wasted. At the same time do not get a farm that is too large for the amount of capital you have to invest. Also, do not

get one that will overtax your capabilities as a manager and an operator. Having either too large or too small an operation can easily cause the failure of any kind of business. The farming business is no exception.

7. Then you must consider the price you will have to pay in relation to the net income that you can reasonably expect to get. It is frequently stated that good land is cheap at almost any price (certainly it is generally cheaper than poor land) but after all when we buy a farm, we must pay for it and provide for ourselves and our family out of what we earn. Buying a farm when the prices of farm products are relatively high can be very inconvenient if payments have to be made when prices are relatively low.

Before you purchase a farm make an accurate check to see that the property is clear, from a legal standpoint. It is usually wise to get a competent attorney to check the legal implications.

Have a good heart to heart talk with yourself and make certain that you honestly wish to farm before you purchase, because farming requires hard work and long hours. These long hours and hard work would be very unpleasant if you did not actually desire to farm. Without complete interest and desire you would likely fail as a farmer. As a further thought it is well to see if your wife or wife-to-be likes farm life. Her happiness and cooperation is essential if the farming venture is to go forward.

FARM AND HOME WEEK

local market during Farm and Home Week. The name of this new brand is Clemson Blue Cheese. This cheese is partly processed here at the college, and it is then taken to the tunnel at Stumphouse Mountain for ageing.

If Thomas G. Clemson could have dethroned himself from the great stone statue in front of Tillman Hall for only a few hours, he would have been utterly amazed at Farm and Home Week.

South Carolinians should be thankful to Mr. Tom Morgan, chairman of Farm and Home Week, to Clemson College officials, and also to the extension workers for their effort is invaluable for our farmer friends and their families.

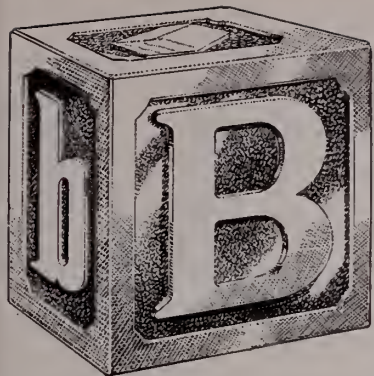
Compliments From

YOUR CLEMSON COLLEGE

PONTIAC DEALER

Sullivan Motor Company

ANDERSON, S. C.



...is for BALE



NO doubt about it—this will sound a million times removed from the subject of bales, but . . .

If you've ever hung around the kitchen much at canning time, you're sure to have noticed it—the similarity, that is, between Ma's putting up preserves and Pa's putting up hay.

For one thing, each—Pa, as well as Ma—attaches to his and her particular job the same prime importance, going about it with the same visible earnestness and at the same unyielding pace. What's more, each applies to the job the same meticulous care every step of the way—from the harvesting, to the preparing, to the final storing.

Ah, yes—the storing. Ma has her special equipment, of course, that helps her to speed through her job and make captive for the winter months the very

most in the way of summer-grown flavor and nourishment. And naturally, Pa has his—a John Deere Baler, that makes an easy task of gathering, packaging, and preserving swiftly and economically the vitamins, minerals, and proteins that contribute so much to the building of flesh and bone in livestock and to the output of better animal products.

Which all goes to show what a difference a good bale makes. Incidentally, that John Deere Baler of Pa's—it's just one of a long line of John Deere Quality Farm Machines and Implements designed and destined to help him and farmers the country over to get the most from a generous earth.



JOHN DEERE • Moline, Illinois

Quality Farm Equipment Since 1837

Enjoy both
sides of smoking
pleasure!



Feel that mildness

Taste that flavor—



that's a *Cavalier!*

LIGHT UP a king-size Cavalier and you *learn* why so many smart college people are shifting to Cavaliers. Yes, Cavaliers give you mildness where it really counts . . . in the feel of the smoke.

You know Cavaliers are extra mild because the smoke feels so mild, so light, smooth and easy-going. And tastes so good . . . so fine and lastingly refreshing. Join the thousands who are enjoying extra mildness and superb flavor in king-size Cavaliers! Get some today!

Off campus, or on . . . Try king-size Cavaliers, and feel that Cavalier mildness, so smooth and light! See if you

don't agree with thousands of smokers who compared king-size Cavaliers with the cigarettes they'd been smoking.

See why, among thousands of smokers interviewed . . .

**8 OUT OF 10 SAID
CAVALIERS ARE Milder!**



CAVALIERS ARE KING-SIZE

yet priced no higher than leading regular-size brands. Why not graduate to Cavaliers?

R. J. Reynolds Tobacco Company, Winston-Salem, N. C.

AGRICULTURAL REFERENCE DEPARTMENT
CLEMSON COLLEGE LIBRARY

The Agrarian

OFFICIAL STUDENT PUBLICATION

CLERMONT, S. C.

THE CLEMSON A & M COLLEGE

MARCH 1955



VOLUME XIV

BULK RATE
U. S. Postage Paid
Clemson, S. C.
Permit No. 4

NUMBER 3

SERVING THE FARMERS
IN NORTH AND SOUTH
CAROLINA SINCE 1906



Planters
Fertilizer & Phosphate Co.

CHARLESTON, S. C.

CHARLOTTE, N. C.

THE AGRARIAN

Volume XIV The Clemson Agricultural College Number 3

Niles C. Clark, Jr.
Co-Editor

Bennie Wiggins
Associate Editor

Ray M. Buck, Jr.
Co-Editor

John D. Patrick
Advertising Manager

Chauncey D. Smith
Business Manager

Thomas E. Hayden, Jr.
Circulation Manager

E. J. Wright, Jr. Feature Editor D. B. Anthony News Editor
Walter Ramage Dept. Editor

Departmental Writers—

Reuel McLeod, Jr., Jack Langston, Fred McLaughlin, Jr., Clyde E. Woodall, Weston Weldon, Watt E. Smith, II, D. B. Anthony, A. G. Neil, Jr., Louis Philhower, Richard F. Elliott, M. I. Fralick, Robert Donaldson, Legare Walpole, Lawton Wofford, W. H. Faver, Bill DuBose, and B. L. Ragsdale.

Advertising Staff—

Louis D. Parsons.

Circulation Staff—

Edward Corley, Earl Little.

Advisory Staff—

B. E. Goodale and T. L. Senn.

THE COVER: Each year, South Carolinians are reminded that spring is almost here by the blooming of the peach. After this year's disastrous freeze which destroyed the state's potential peach crop, this picture serves as a bold reminder of the risks the farmer must take in order to produce the food and fiber which feeds and clothes the world.

IN THIS ISSUE

Recommended Crop Varieties in South Carolina	Page 3
In-Service Training for Agriculture Teachers	Page 4
Our One-Hundred Year Insect War	Page 6
The Marketing Outlook	Page 8
Between the Furrows	Page 10
The Men who Guide Us	Page 12
Stilbestrol—the New Wonder Drug	Page 14
A New Clemson Product—Blue Cheese	Page 16
Heard Here and There	Page 20

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education, and sponsored by the South Carolina chapter of Alpha Zeta. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

AGRARIAN

PHILOSOPHY

Ray Buck, Co-Editor

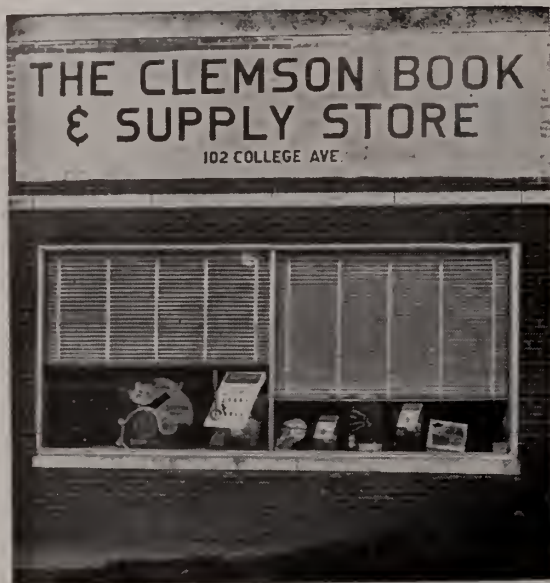
Spring has returned to us again as it does each year. It returns with beauty, with joy, and above all else, with hope for the future. The labor of spring has returned also. We could not wish to have all this goodness without labor. We work diligently and hopefully to bring forth greener fields, fuller harvests, and to add beauty to that which Nature brings to us. Plowing and planting, tending and tilling are signs of spring as sure as the song of the robin or a peach tree in bloom. In our work, we work with hope, we work for the future.

The history of our troubled civilization can be compared to the seasons. It is repeated again and again just as the seasons come, pass, and come again. The fall of man's sensibility has resulted in untold strife and countless wars — senseless, destructive, hopeless wars. The earth has blazed red with the flames of destruction. Men and hopes have fallen as leaves before the October wind. Wars end, but who is victor?

And then the earth lies gray and still and cold. Destruction passes, but there is no peace in desolation. The world is barren; it lies dormant, waiting.

From this destruction hope springs. Men begin to face the future, with lifted eyes. Men dare to dream. They dare to dream of joy and beauty and peace. Men again feel the joy of building and there is a reawakening, and a new life rises. Peace is a glorious thing.

Must this spring, this peace, this dream of the ages pass away as spring passes into summer and summer into fall and winter? We must not despair. We must carry this ageless dream forward and add dreams of our own. These dreams must be fortified with work and, above all, our earnest prayers that God will alter the seasons of future generations that men may live in the eternal spring of Peace.



Two familiar old faces always welcome
you back to the campus.

CLEMSON BOOK STORE
Official College Book & Supply Store

L. C. MARTIN DRUG COMPANY
Serving Clemson Men Since 1908

W. B. Camp & Sons, Inc.

Bakersfield, California
and

Gaffney, South Carolina

Buckfield Plantation

Yemassee, South Carolina

Recommended Crop Varieties in South Carolina

Bill DuBose, Ent. '57

Spring has again made its entrance into the South. The trees, awakening from their winter dormancy, are beginning to put forth buds for the seasons new growth. So are the farmers in South Carolina beginning to sow the seeds for a new harvest season in the fall. All winter, the farmers have been planning this year's crops, where each crop will be planted, how it will be cultivated, and the multitudes of other decisions which have to be made in advance. Possibly he has been planning to use a new variety of a certain crop, or perhaps he has been planning to use his same old stand-by for another harvest yield.

In this article it is the wish of the author, with the advent of spring, to present some of the latest in crop varieties and review a number of the stand-bys of the past years. The author is not in a position to recommend any of the crop varieties discussed; his purpose is not to advocate certain varieties, but to present them for the interest of the reader.

Cotton, South Carolina's number 1 cash crop, is represented by Coker 100 W. R., Stonewilt, and Empire in the 1955 crop recommendations program for South Carolina. The world record in production is held by Coker 100 W. R. which was established in 1951. These varieties should be planted in fertile well-drained soil as soon as danger of cold weather is past. The seed can be treated with 8 ounces of 2 percent Ceresan or 4½ ounces of New Improved Ceresan per 110 pounds and planted at a rate of 25-30 pounds per acre. Along with proper cultivation and fertilization practices, the proper recommended insecticides should be used and applied with thorough covering at the most advantageous times to provide for effective insect control.

The second most important field crop—in normal annual returns per year is tobacco. Flue-cured tobacco

is now grown by about 34,000 farm families, mostly in the Coastal Plains section of the state. Plant beds protected by windbreaks to the north and west should be prepared from deep mellow loam soil with high organic matter content. These soils should be of average fertility and have good water holding capacity. Beds are prepared in January and February and the small plants are transplanted between April 15 and May 1. Seeding of the bed should be 1/3 ounce of seed per 100 sq. yd. Golden Harvest, 402, Virginia Gold, Golden Wilt, Oxford 1-181, Golden Cure, Hicks, and Dixie Bright 101, are some of the better producing varieties.

Corn, the most important feed crop in South Carolina, occupies about a fourth of the total acreage of cropland. With recommended hybrids and varieties, the farmer can with other proper practices use his land to produce more than the average 23 bushels per acre in South Carolina. Recommended varieties are: Coastal 811 and Dixie 18 in the Coastal areas, Dixie 17, N. C. 27, Douthit's Prolific, and Latham's Double. In the Testing program car-

ried on at the branch experiment stations, Coker 811, a white grain hybrid, ranks first in production and lower in average per cent of lodging. This variety will produce 53 bushels per acre with 19 percent lodging over a 3 year average. This can be compared with the results of the 3 year average for Dixie 18, a yellow grain, which produced 53 bushels per acre and 30 per cent lodging occurred. In the Piedmont section of the state, Coker's 911 is recommended for the white grain variety while N. C. 27 is a good yellow grain. Coker 911 produced 63 bushels per acre with a loss of 19 per cent due to lodging, and N. C. 27 produced 59 bushels per acre with 16 per cent lodging. These figures represent a testing average of four years.

Corn seed should be planted in fertile, loamy, good to fair drainage soil. Seed may be treated prior to the planting time (March 1-April 15) by applying Arasan SF and DDT in slurry.

Soybeans is rapidly becoming a good cash crop for the Coastal Plains farmers who use the beans for oil.

(continued on page 12)



Plant a recommended variety for best results

In-Service Training for Agricultural Teachers

Clyde E. Woodall, V.A.E. '57

When a prospective agriculture teacher graduates from Clemson there are many problems that he will soon face. For instance, does he know the best teaching techniques? Is he skilled in handling a class of boys? Does he know how to work with adult farmers? These are just a few of the many questions that he must answer. He must learn to apply the principles which he was taught at Clemson. Since agriculture is a changing field, the teacher must quickly adapt himself to new and better methods. He must be capable of advising young farmers as to the better ways of farming for each particular situation. He faces many problems which he did not study in college. He needs new materials on all recent developments in agriculture and he sometimes requires aid in analyzing them in order that he may be capable of presenting these materials to his students in a way they can understand.

This is where the In-Service Training program for agriculture teachers plays its role in the development of better teachers. This program is for both the beginning teacher and those already on the job. The activities are provided for and carried out cooperatively by the Agricultural Education Department, Clemson College, and the Agricultural Education Division, State Department of Education. The three phases of the in-service program are: (1) Follow-up of beginning teachers; (2) Preparation and distribution of teaching materials; and (3) Assistance to teachers through group meetings and workshops.

The follow-up of beginning teachers is being carried out by W. C. Bowen, Associate Professor of Vocational Education here at Clemson. Mr. Bowen visits all first-year teachers three times during their first year of teaching and may visit them in their second year. Other teachers who have some special problem are also assisted. The first visit to the new teacher is made early in the fall for one day. During this visit the teacher is assisted in: (1) Planning his teaching program for the year;

(2) Obtaining teaching materials; (3) Using proper methods of instruction; (4) Planning adult and young farmer programs; and (5) Planning for community service.

The second visit is in the winter and lasts for two days during which time the teacher is observed on such points as presentation of material, class management, and results obtained. Also, the teacher is observed as to voice, tact and poise, interest, appearance, alertness, and cooperation. If additional materials are needed, Mr. Bowen helps to obtain them. He helps the teacher to analyze the needs of the local community and also to base his teaching program upon these needs.

The third visit is in the spring and lasts for one day. The visit is to observe what progress has been made with the instructional groups, observe improvements made in teaching facilities, and study the plans for the summer program.

The preparation and distribution of teaching materials for agricultural teachers is being carried out by Mr. F. E. Kirkley, Associate Professor of Vocational Education, Clemson College. Experimental findings in agriculture from the South Carolina Experiment station and those of nearby states, agricultural publications, and materials from the U. S. Department of Agriculture are used. These various publications are studied and analyzed for the most usable data by the teachers. This information is then arranged in "teaching form" or lessons. Teaching materials are prepared and distributed as printed bulletins and mimeographs. The mimeographs, entitled "Teaching Information for Agriculture Teachers," are published every four to six weeks. They contain not only recent experimental data, but also information relative to methods and procedures in teaching.

The printed bulletins usually carry more detailed information on one enterprise. Two bulletins prepared and distributed last year were: "Small Grains, as Enterprises in Supervised Farming Programs for Students of Vocational Agriculture,"

and "The Production and Preservation of Foods by Farm Families Through Instruction in Vocational Agriculture." The content of the printed bulletins is usually discussed when distributed to teachers.

The third phase, "Group Meetings and Workshops," varies from year to year. Everyone knows the old proverb, "Seeing is Believing," and this can also be applied to agriculture teachers. If they can see and take part in the operation of some teaching job, they learn much better and faster. In recent years, workshops in farm forestry and soil conservation were held with all teachers. Last year Mr. Kirkley and Mr. Bowen held meetings throughout the state on producing foods and preserving them in community canneries. The use of concrete on the farm, simple electrical jobs, and the establishing of running water on the farm, are some of the other jobs which have been discussed and demonstrated with small groups of agriculture teachers on a workshop basis. Various state agencies and commercial concerns have cooperated in making this training effective.

Farming is rapidly changing in South Carolina. Much research is being carried on in agriculture. New farm problems arise each year. The farmer can quickly become out-of-date in his farming methods. Likewise, the agriculture teacher must keep up-to-date. He cannot possibly acquire all the information and training in his four years at Clemson that he will need out on the job. The in-service program is apparently helping to meet this need. This type of work is being favorably received by the teachers.

There is a need for further extending assistance to agriculture teachers. The teaching problems of many teachers are peculiar to that locality. Our Agricultural Research Program in South Carolina, with the five sub-stations distributed over the state, offers a method of improving and assisting our agriculture teachers, as well as other agricultural workers, to be of greater help to the farm people.

insects

YOU SHOULD KNOW

*How To Identify
These Crop Destroyers*



POTATO LEAFHOPPER

Empoasca fabae (Harr.)

This leafhopper is one of the alfalfa producer's greatest enemies because all stages of the pest suck juices from alfalfa plants, stunting growth and reducing yield. They are also the cause of "hopper burn" on potatoes. A tiny, pale-greenish insect, this leafhopper is not found in Northern states during winter, probably flying in from the South, where they breed during the entire year.



BOLLWORM

Heliothis armigera (Hbn.)

A major cotton pest, the newly hatched bollworm feeds on leaves and then attacks squares and bolls. Greatest loss is caused by tunneling into and destroying bolls. Color varies from pink, green, to almost black. The full-grown worm is about 1½ inches long. The female lays about 1,000 eggs, particularly on growing tips, squares and bolls.



ARMYWORMS

Pseudaletia unipuncta (Haw.)
and *Laphygma frugiperda* (A. & S.)

Armyworms are a major pest of cereal and forage crops, their damage sometimes totaling millions of dollars. Armyworm invasions commonly follow cold, wet springs. The tiny, newly hatched caterpillars feed near the ground. Fully grown, they have enormous appetites, the noise of their feeding making a rustling sound in the fields.

toxaphene

DUSTS • SPRAYS

*For full-color booklets showing
these and other insects write to Hercules*



Our One-Hundred Year Insect War

Jack C. Langston, Ent. '56

America's population is increasing by more than 7,000 persons a day. A year from now there will be two and one-half million more people; in twenty years, more than thirty million. Where will the additional food come from to feed and clothe the growing population? Most of the land that is suitable for farming is already being used for that purpose. In the main, increased production must come, not from new land, but from improved farming practices.

Insect control is one of the best ways to increase production—and if production must be increased, surely it is important to protect our food and fiber from insect damage after they are produced. Hundreds of entomologists are at work on research projects aimed at reducing insect damage and providing farmers with the "entomological know-how."

The profession of entomology began in the U. S. in 1854. Recognition of the need for insect control led to the appointment of two entomologists to government positions. One worked for the Federal Government and the other for the State of New York. Soon, others entered this new field of science. These men blazed scientific trails, and left guideposts for other entomologists to follow in studying methods of controlling insects and minimizing their destructiveness.

Today, fewer than one-thousand persons work full-time in research on insect problems. During the past century, the profession on entomology has had less than 6,500 members. Yet the efforts of these dedicated men and women have helped this country to become one of the strongest, and its people to be among the healthiest and best fed on earth.

Some entomologists specialize in taxonomy, physiology, or biology, and some in bee culture. Those in schools train future entomologists and pass on new ideas and information to the public. But most entomologists are in the insect-control phase of the profession. As research

workers, plant-quarantine inspectors, supervisors of control programs, or Extension Service specialists, they are directly concerned with combating the approximately 10,000 kinds of insects that destroy our food, injure our health, or damage our homes and our possessions.

Few people have any idea what would happen if man's ceaseless war on insects was relaxed for even a month—millions of bushels of wheat ruined, an entire potato crop reduced by one-half or two-thirds, or every fifth person in a major city mortally ill with plague or yellow fever—such possibilities never occur to the average American.

Unlike most other troubles of man, bugs affect each and everyone of us. They work on our agricultural crops, both food and fiber; they invade our homes to feed on our woolens and our food; they despoil our forests and our outdoor recreation areas, and they transmit some of the most dreaded sicknesses of mankind. Entomologists estimate they cost us at least four billion dollars a year.

Without insect control, these pests would destroy more than half the annual agricultural per-acre production of the farm and ranches of the United States. A majority of the most destructive insects of North America are aliens. Beginning with the discovery of this continent and continuing until the passage of the Plant Quarantine Act of 1912, foreign pest hitch-hiked on passenger and cargo ships to this country. They are still trying to get in—and occasionally succeeding—but our quarantine inspectors generally prove to be an effective barrier.

Insects have played a vital part in the history of the United States. Some entomologists maintain that mosquito-borne malaria in the Southeast debilitated slaves so that they could not work the rice plantations of Georgia and the Carolinas, and thus impaired the economy of that section of the South—that it was malaria, and not the Civil War, that impoverished the rich rice plantations of the Southeast. Malaria

(continued on page 18)



Dean Farrar testing an insecticide.

52 YEARS OF SERVICE
TO SOUTHERN AGRICULTURE



"The South's Foremost
Seed Breeders"

COKER'S PEDIGREED
SEED CO.

HARTSVILLE S. C.



Write for Catalog and Prices

Hours 11:00 a.m. — 12:00 p.m.



DAN'S

For the BEST in
Hamburgers and all
types of Sandwiches

Carolina's Pride
Meat Products



GREENWOOD PACKING
PLANT

GREENWOOD, S. C.

Victor Cotton Oil Co.

GAFFNEY, S. C.

Dealers in
COTTONSEED AND
COTTONSEED PRODUCTS
FEEDS AND
CUSTOM MILLING



COTTON WAREHOUSE AND
STORAGE FACILITIES FOR
FARMERS, COTTON MILLS
AND BUYERS

The Marketing Outlook

W. H. Faver, Jr.
Ag. Ec. Graduate Student

In general, South Carolina farmers can expect to receive about the same prices for their farm products as those prevailing in the latter part of 1954. Marketing margins for food products will average near current levels or slightly higher than in 1954. The farmers share of the consumer's dollar spent for farm products will average about 43 cents, less than in any year since 1941, but 4 cents more than the 1935-1939 average. Available facilities, labor and other resources generally have been adequate to handle the large volume of farm products marketed in 1954 and no serious shortages are in prospect.

In the past several years new methods of marketing farm products have reduced some marketing costs. Examples of such are the collection of milk in tank trucks, bulk handling of such commodities as flour and sugar, and the use of lighter and cheaper containers in which to market fruits and vegetables. In many lines the scale of operations has been increased leading to economy in the use of labor, equipment and other resources. Selling milk and other products through vending machines is becoming more common, as are discounts granted for quantity purchases of milk. Freezing of fruits and vegetables has been a big step in reducing losses occurring in shipments of perishable products.

The general level of economic activity is one of the most important factors influencing the marketing of farm products. Generally this outlook is encouraging. Retail sales were up in January and were expected to remain about the same throughout the year. Food sales were up 2 percent. Incomes are now at a new high and consumers are using more credit now than at this time last year. Exports of farm products were up 10 percent from last year and from all indications will remain at about that level.

Prices consumers pay for food is expected to remain at the present level. Major changes in prospect are some marketing increases over 1954 for poultry and egg products and for

canned fruits and vegetables. Prices of pork will most probably be lower than last year. Consumers are expected to eat about the same amount of food as in 1954 and will most probably spend about the same proportion of their incomes for it. The consumer's food dollar is likely to be split about the same way this year as in 1954 with 43 cents going to the farmer and 57 cents to the marketing agencies.

Beef cows 2 years of age and older and heifers 1 to 2 years old are likely to increase on farms slightly during 1955. Number of bulls will probably decline and the number of calves will increase by about 2 percent. The 55 million hogs and pigs on farms January 1 was 13 percent above the relatively low figure of a year earlier. There may be a slight increase during 1955.

The outlook for dairy products is equally encouraging. The consumption of fluid milk has increased recently and is expected to remain at about the present level during 1955. The increase is due partly to the school lunch program, higher consumer incomes, and slight price declines in some cities. Use of fluid milk per person in 1955 will be up from 1954, although other dairy products are not expected to change. There were slightly fewer milk cows on farms January 1 than a year earlier. They are expected to produce about the same amount of milk as in 1954, barring drought, short pasture season, etc. Since the total use of milk will be up, the surplus will probably be lower than in either 1953 or 1954.

The higher broiler prices of the past few weeks are partly responsible for the expected increase in broiler marketings this spring. There will probably be about 18 percent fewer chickens raised for laying flock replacements than were raised last year.

The 1955 wheat crop is expected to be about 250 million bushels as compared to last year's 217.

Exports of cotton are up and are expected to remain above last year's

figure. Exports totaled 1,626,000 bales from August 1 to December. This was a 397,000 bale increase over the same period of the 1953-54 season.

Production of fresh vegetables was down in March about 7 percent from last year. This was partly due to the mid-February freezes in Texas and Florida. Stored supplies of canned and frozen vegetables are below last year's level. The prices of both potatoes and sweetpotatoes are well above a year earlier and are expected to remain up for a few months.

An understanding of the marketing outlook is partially dependent upon an understanding of marketing margins, which is one of the most complex problems confronting workers in the agricultural industry. Why should a shirt made from 35 cents worth of cotton cost \$3.95? Why 95 cents steak from 30 cents cattle? To understand these "large" margins, one must understand the whole process of marketing. As the 1954 Yearbook of Agriculture states, "The basis of marketing is this: Farm goods must be stored, transported, processed, and delivered in the form, at the time, and to the places that consumers desire. Those functions are performed more and more by specialists and less and less by farmers. Their competition for your dollar encourages efficiency and conflict. The price of goods processed or made from American farm products in recent years has run about two and one-half or three times the farmer's cash receipts. Is something wrong, then, with our marketing system? An answer to that question and to others like it rests on an understanding of marketing which can be said to begin at the farm gate. A brief first look discloses the many things that happen afterward. Assembling the raw commodities, transportation, preparation for use, storage, shifting and sharing risks, change in ownership, pricing, and exchange, wholesaling and retailing." These are the major factors responsible for marketing

(continued on page 20)

Greatest guardian of our soils is grass. Greatest single principle of soil conservation is grassland farming. And in that the great problem is how to make the grass productive and profitable—a worthy challenge to young ideas.

Green feeding is a new name for the old-world practice called soiling. It now becomes practical here because fast-working machines take the place of drudging labor. To choose between green feeding and grazing takes keen judgment on many points, from pasture fencing to possibility of bloating. In any plan for green feeding, the thing most essential is dependability of the machines that do the daily cutting. Cattle can't wait for their meals.

As you consider the merits of various meadow mixtures . . . of unloading to feed rack or allowing animals to eat from wagons . . . of greater or less amounts of grain and hay along with grass . . . take heed, too, of the machines you choose. For more than a hundred years it has been a Case habit to make every part a bit better than might seem necessary. It's an old habit that can help young ideas make the most of grass . . . whether you graze or green-feed, put up hay or silage. J. I. Case Co., Racine, Wis.

YOUNG Ideas Guide Trend To Grass



"Chop the Crop" . . . the story of how to harvest, handle and store chopped crops . . . is available as a full-color, sound motion picture and a booklet. Arrange with your local Case dealer for these educational aids . . . ask him also for a catalog on Case Forage Harvesters, described by users as America's Lightest-Running Forage Choppers . . . and available with today's widest choice of attachments. J. I. Case Co., Racine, Wis.



CASE

Serving Farmers Since 1842



ALPHA ZETA TAKES IN NEW MEMBERS

On March 14, seventeen new members and two associate members were formally initiated into the South Carolina Chapter of the Fraternity of Alpha Zeta, national honorary agricultural fraternity. Alpha Zeta members are selected on the basis of their scholarship, leadership, and character. The associate members were selected on the basis of their leadership and service to students and farmers in the fields of agriculture and agricultural education.

The new members are the following named men: Carol E. Brown, an animal husbandry sophomore from Kingstree; Rawl D. Culclasure, Jr., a dairy senior from St. Matthews; Daniel D. Lee, an agricultural engineering sophomore from Dillon; James T. Ligon, an agricultural engineering sophomore from Easley; Reuel McLeod, an animal husbandry senior from Timmonsville; Alfred H. Pitts, an animal husbandry junior from Fort Motte; Jimmy A. Richardson, an agricultural engineering sophomore from Lancaster; William C. Thomas, an agricultural engineering sophomore from Edgemoor; Sanford N. Smith, an agricultural engineering senior from Spartanburg; James C. Stephenson, a pre-forestry sophomore from Clemson; Gene R. Ware, an agronomy senior from Due West; and Elbridge J. Wright, an agronomy junior from Belton.

The new associate members are professors L. M. Bauknight, associate professor in agricultural economics department; and Dr. M. D. Farrar, dean of the school of agriculture.

DAIRY CLUB NEWS

Among the many interesting programs that the Dairy Club has had this year is the program of January 11, 1955 in which Mr. B. D. Cloaninger, Head of the Fertilizer Department, gave a talk about Clemson and some of its activities. Mr. Cloaninger brought out some very interesting information about Clemson College and the Experiment Sta-

tion work. Another interesting program was a moving picture entitled "The Rumen Story" which was shown at the meeting on February 8. This picture showed the complexity of the digestion in ruminant animals by actual observation through a window that had been inserted in a cow's rumen.

For a project this year the Dairy Club sponsored Preston the Magician and Hynotist on February 24 and 25. Each member took an active part in advertising, selling tickets, and preparing the auditorium for the show. This show was a success and the Dairy Club would like to thank everyone who made it possible.

The Dairy Club extends to anyone majoring in Dairying an invitation to join the club at any time. Meetings are held on the second and fourth Tuesdays of each month in the Dairy Building at 6:15 P. M.

BLOCK AND BRIDLE CLUB NEWS

We are looking forward to our most successful semester of club work in many years. There are opportunities for everyone. Freshmen have the Freshman Judging Contest coming up in the very near future. The two top men will be awarded prizes by the club. These prizes are something the winners will value highly for many years to come.

Everyone seemed to enjoy the delicious barbecue at the Bull Sale. This barbecue was prepared and served by members of the Block and Bridle Club. Another enjoyable barbecue put on by the club was the Intra-Squad Game barbecue which was served in the Clemson Field House on March 12.

Professor Handlin has taken steps to revive the Clemson Judging Team that once was active in the Southeastern Intercollegiate Judging Contest. Clemson was a charter member of this contest, and many club members are out for this team. All sophomores, juniors and seniors majoring in animal husbandry are eligible. This year the contest will be held on April 22 at Auburn.

FOURTEEN AGRICULTURAL SCHOLARSHIPS

A total of 14 agricultural scholarships will be offered at Clemson during the 1955-56 school year, according to Dr. J. W. Jones, Director of Agricultural Teaching here.

Dr. Jones said that the scholarships included 10 freshmen awards valued at \$200 each given by Sears-Roebuck Co., and one sophomore award of \$250 by the same company to the most outstanding freshman Sears-Roebuck scholars of the preceding year. These awards are given on a state-wide basis to South Carolina boys with farm experience.

Of particular interest to prospective college students from Oconee County is the George E. and Leila Giles Singleton Scholarship, provided by G. H. Singleton, in honor of his parents. This scholarship, which may be held for two years by the same person provided his record as a freshman is satisfactory, is for \$300 for a farm boy from Oconee County.

The donor of the Singleton award was graduated from Clemson in 1919 in agricultural education and has been manager of the Wake Farmers Cooperative in Raleigh, N. C., since 1930. He was born in Greenville.

To be awarded for the first time this year is the Smith-Douglass agricultural scholarship, which is provided by Smith-Douglass Co. Inc., Wilmington, N. C., manufacturers of fertilizers and chemicals.

Two four-year awards valued at \$750 each are payable as follows: freshman year, \$300; sophomore year, \$200; junior year \$150; and senior year, \$100.

The eligibility of these Smith-Douglass Scholarships is limited to residents of Clarendon, Darlington, Dillon, Florence, Georgetown, Horry, Lec. Marion, Marlboro, Sumter and Williamsburg Counties.

Applicants for all of these scholarships must meet freshman entrance requirements at Clemson, enroll in either the summer or fall of 1955, and specialize in some phase of agriculture or vocational agricultural



education. The awards are made, according to Dr. Jones, on the basis of the applicant's high school record, financial need, leadership and score made on the psychological placement test required of all freshmen entering Clemson. Winners will be selected by a Clemson faculty committee.

Application forms for these scholarships may be obtained by writing to Dr. J. M. Stepp, chairman, Agricultural Scholarship Committee, Box 792, Clemson, S. C. Applicants must take the required placement test by May 14, and must mail forms by May 15.

The schedule for the placement test is as follows: Clemson, Registrar's Office, April 2, 30; June 13, July 20 and August 24; Charleston, Charleston High, April 16; Columbia, Dreher High, May 14, August 4; Florence, Florence High, May 7; Greenville, Greenville High, March 26; and Spartanburg, Spartanburg High, March 19.

AGRICULTURE STAFF ATTENDS CONVENTION

Clemson was well represented at the Fifty-second Annual Convention of the Association of Southern Agricultural Workers by members of the teaching and extension staffs of the Agriculture and Agricultural Engineering departments. The convention was held February seventh through the ninth at Louisville, Ky.

ALPHA GAMMA RHO AWARDS SCHOLARSHIP

Winner of the 1954 Alpha Gamma Rho \$200 Scholarship is John Paris, Spartanburg county. The check was recently delivered to him by Leon O. Clayton, state boys' club agent. The national award is presented annually to the 4-H club boy in the nation with the most outstanding 4-H achievement, leadership, and scholarship record. The Alpha Gamma Rho is a national agricultural fraternity with headquarters at Urbana, Illinois. John is a student at Clemson College.

4-H CLUB NEWS

Curtis E. Wallace of Gray Court and Richard G. Christopher, III of Hodges, former 4-H Club members, have been selected as 1955 delegates in the International Farm Youth Exchange Program.

Curtis will go to Israel and Dick to Denmark. Their selection was based on their achievement and leadership in 4-H Club work and other organizations. Both are members of the South Carolina Master 4-H Club.

According to information received by Mr. L. O. Clayton, state IFYE leader, both men will report to Washington, D. C., on June 11 to complete their orientation. While there they will join other delegates to European and Near East Countries and on June 18 they will sail from Quebec.

They will live, work, attend meetings, and go to church with various farm families for five months in their assigned countries. Some 135 young people from the United States will go to about 40 countries this year.

At the last 4-H Club meeting Bill Dailey, the delegate to Scotland last year, showed slides and made a brief talk on the things he did and saw while he was in Scotland last summer.

It is planned to have Bill Dailey, Fred McLaughlin, and Benny Wiggins present a program which will consist of talks by each and the showing of slides of the three countries they visited last summer as 4-H Delegates. This program will be open to the public and the date will be announced later.

HORTICULTURAL CLUB NEWS

The Horticulture Club sent two representatives to the annual meeting of the Collegiate Branch of the Southern Division of the American Society of Horticulture Science. This was part of the convention of the Association of Southern Agricultural Workers held in Louisville, Kentucky, on February 6th through the

9th. The two representatives were Dan Robinson of Lancaster and Louis Parsons of Georgetown. The boys took part in the Collegiate Branch's proceedings plus the many other Horticulture meetings at the Convention. Funds were provided for the two boys from the treasury of the local Horticulture Club and also from the Horticulture Department here at Clemson.

The Horticulture Club is asking all interested in Horticulture to become members and take part in the many worthwhile activities of the Club.

AGRONOMY CLUB NEWS

The Clemson Chapter of the National Society of Agronomy held its regular bimonthly meeting Tuesday, February 22, 1955. Election of club officers was held and the following members were elected: President, J. D. Hicks, Jr., of Effingham, S. C.; Vice-President, B. L. Norwood of McBee, S. C.; Secretary, J. M. Gause, of Coward, S. C.; Corresponding Secretary, N. L. Huggins of Johnsonville, S. C.; and Treasurer, J. W. Thomas of Lake City, S. C.

After the election plans were made to have the prospective members attend the next meeting. At this meeting Dr. G. H. Collings plans to show slides on the planning and designs of different college agricultural structures located in the United States.

AG ECONOMICS CLUB NEWS

After several years of inactivity and due to the untiring efforts of Dr. J. M. Stepp the Agricultural Economic majors re-organized The Agricultural Economics Club. This club is affiliated with The American Farm Economic Association and membership in the club entitles a student membership also in AFEA.

The officers which were elected at the first meeting this semester are:

Louis Philhouser, President; Homer Anderson, Vice President; George H. Clarke, Secretary; Robert L. Huffman, Treasurer; Dr. J. M. Stepp, Faculty Advisor.

The Men Who Guide Us

B. L. Walpole, Agron. '55

JAMES B COOPER

Professor Cooper was born in Nicholasville, Ky. In 1934 he graduated from the University of Kentucky with a B.S. degree in poultry and in 1938 he received his M.S. from the University of Kentucky. He has had



six years of practical poultry farming and hatchery experience. He taught poultry at the University of Georgia for 4½ years before coming to Clemson. At the present he teaches laboratory and theory in Farm and Commercial Poultry Production, Poultry Grading and Processing, Incubation and Brooding, and Seminar courses. Mr. Cooper is active in the Clemson Community Council, Boy Scouts, Parent-Teachers' Organization, and church work.

GILBEART H. COLLINGS

Dr. Collings graduated from V.P.I. in 1915. In 1917 he received his M.S. from the University of Illinois where he studied under Dr. C. G. Hopkins. He received his Ph.D. from Rutgers University in 1925 under the late Dr.



J. G. Lipman. Dr. Collings is the third oldest faculty member from point of service and is widely known, not only in the classroom where he now teaches Soils, Fertilizers, Soil Management, and Advance Soils Lab, but for his fertilizer text, "Commercial Fertilizers" which is used throughout the United States and to some extent in foreign countries. The fifth edition of this text recently came off the press. He has also published some 100 general agronomy and research articles.

RECOMMENDED VARIETIES

(continued from page 3)

This is also widely used for hay, grazing, silage and green manure. Most fertile well drained soil types may be used when planting the seed in May or early June for seed or May through July for hay. When planting for silage soybeans should be planted when corn is planted.

The beans should be placed in the drill of 24- to 36-inch rows at a rate for large seed of 50 to 60 pounds per acre; medium seed will require 40-50 pounds to the acre, and small seed, 30-40 pounds per acre. When broadcasted or drilled solid the seeding rate is doubled.

The recommended varieties of soybeans for 1955 are:

He has served as former President of the Pendleton Farmers Society, South Carolina Academy of Science, and as South Carolina representative to the American Association for the Advancement of Science.

DR. G. W. ANDERSON

Dr. Anderson was born in Fremont, Nebraska, attended, and graduated from Ohio State College with a B.S. degree. He continued his studies and received his M.S. at Ohio State College and his D.V.M. was received at Virginia Polytechnical Institute.

This year is the first year of teaching here for Dr. Anderson. He teaches Animal Diseases, Anatomy and Physiology, and Pathogenic Diseases of Livestock. Dr. Anderson taught two years at Virginia Polytechnical Institute before coming to Clemson.

Extra curricula activities include research work as a member of the Experiment Station Staff. Dr. Anderson mentioned golf as his favorite extra curricular activity.

(No picture available)

Oil: Jackson, Lee, CNS 4, JEW 45, Roanoke.

Hay: Ootootan, Yellow Gatan.

Silage and grazing: Biloxi.

Small Grains: Oats, wheat, barley, and rye, are grown for grain grazing, and winter cover. In the oats variety test of 1954 Victorgrain 48-93, 1953 B.R.S. out produced all other varieties in yielding 126 bushels per acre. Arlington and Fulgrain are also good producers recommended to planters for 1955.

Oats grow well on loams and clay loams. For grain, the time of seeding is from October 1 to November 15. For cover crops or grazing, the planting time should be as soon as possible after September 1. Eight pecks should be planted per acre for grain, 4 bushels per acre when used for cover, grazing, or hay. See

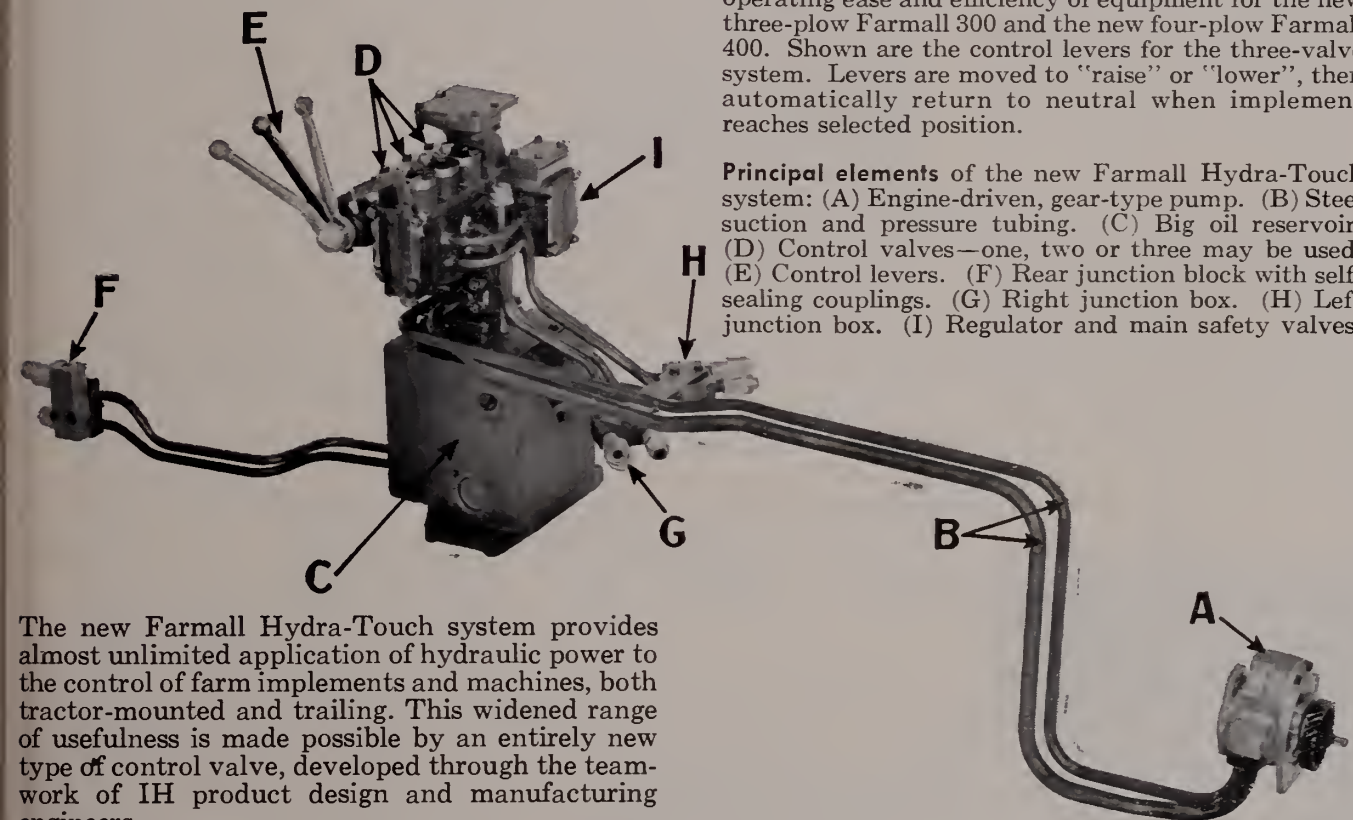
(continued on page 18)

**How IH engineers
widened the scope of
hydraulic implement
control with
NEW FARMALL®
HYDRA-TOUCH!**



Farmall Hydra-Touch hydraulic system increases the operating ease and efficiency of equipment for the new three-plow Farmall 300 and the new four-plow Farmall 400. Shown are the control levers for the three-valve system. Levers are moved to "raise" or "lower", then automatically return to neutral when implement reaches selected position.

Principal elements of the new Farmall Hydra-Touch system: (A) Engine-driven, gear-type pump. (B) Steel suction and pressure tubing. (C) Big oil reservoir. (D) Control valves—one, two or three may be used. (E) Control levers. (F) Rear junction block with self-sealing couplings. (G) Right junction box. (H) Left junction box. (I) Regulator and main safety valves.



The new Farmall Hydra-Touch system provides almost unlimited application of hydraulic power to the control of farm implements and machines, both tractor-mounted and trailing. This widened range of usefulness is made possible by an entirely new type of control valve, developed through the teamwork of IH product design and manufacturing engineers.

The new Hydra-Touch control valve permits the use of either single or double-acting cylinders. With the latter, implements are power-lowered, as well as raised, or can be "nudged" to vary working position with hairline accuracy. Down pressure can be applied. The valves also can be set to provide implement "float".

Practically any desired degree of control is easily obtained. Up to three control valves may be used

and roving cylinders may be applied as required for either unit implement control, or control of sub-units. Cultivators, for example, may be equipped for delayed, selective, and/or unison gang control. Draft point of McCormick Fast-Hitch plows and other implements are hydraulically controlled, resulting in highest quality of work with minimum draft.

For complete details showing why new Farmall Hydra-Touch allows hydraulic power to be more flexible than on any other three-plow or larger tractors, write for free catalogs on New Farmall 300 and Farmall 400 tractors.



INTERNATIONAL HARVESTER

International Harvester products pay for themselves in use—McCormick Farm Equipment and Formoll Tractors . . . Motor Trucks . . . Crawler Tractors and Power Units . . . Refrigerators and Freezers—General Office, Chicago 1, Ill.

Stilbestrol--The New Wonder Drug

Reuel McLeod, A. H. '55

As every farmer with at least one eye or one ear, or the ability to read braille knows by now, it did not take long for STILBESTROL to reach the crossroads feed dealer after its use in cattle feeds was accepted by federal officials last November. The benefits of STILBESTROL, as well as its limitations, have been observed under practical feedlot conditions on thousands of farms already.

STILBESTROL is like dynamite. It packs a powerful wallop. Only a small quantity (.00035 of an ounce) is needed in the daily rations of fattening steers and heifers for best results.

Actually, the use of this hormone-like substance is not new. The commercial poultrymen have used it with Food and Drug Administration approval for several years. They found it to be most economical when implanted under the neck skin of the young rooster to produce more meaty birds, resembling the typical capon. However, tests show that it

was common with implanted cattle to run into adverse effects — high tailheads, udder development, excessive riding in the feedlot, and a lower carcass grade. Presumably, this is caused by too fast absorption of the implanted material. Recent tests indicate that these harmful effects may be overcome when STILBESTROL is fed, rather than implanted. This drug must be used with consideration because if given in adequate quantities, can produce changes in the delicate balance of an animal's glandular activity.

There are many unsolved problems concerning the effect of this drug on cattle. How STILBESTROL works is the question that needs an answer. Research is being done that may provide logical explanations of the observed variation in normal growth. All sorts of claims have been made concerning the results from this drug. However, it is generally accepted that there is less fat and more edible meat on a carcass.

Just what is this white powder called STILBESTROL? It is a man-made drug that resembles the female hormone, Estradiol. Estradiol is the estrogen produced in the Mature or Graafian Follicle. The secretions of ductless glands like the thyroid, are closely related to sexual development and to secondary sexual differences, such as the growth of beards in men. In farm animals, as in human beings, milk production and other reproductive functions are in part regulated by the female sex hormones, one type of which is called estrogen. In medicine, processed estrogen hormones have been used for years in treatment of female disorders involved in pregnancy or menstruation.

STILBESTROL is relatively safe, Rumors, not entirely without foundation, have cropped up about men in drug manufacturing firms becoming sweater girls from handling pure STILBESTROL. Under long exposure, STILBESTROL can be taken into the system through respiration in sufficient amounts to cause glandular disturbances. The chemical can also be absorbed through unbroken skin. But when used in livestock feeds in the quantities limited by law and when fed as recommended STILBESTROL has been pronounced free of health hazard to farmers and to meat consumers alike. The difficulty with STILBESTROL feeding is in controlling each animal's daily quota. Boss steers can be a problem. One solution is to mix stilbestrol-fortified supplements with ground shelled corn, as was done in an experiment at Iowa State College. Cobs and molasses feeds are also being used as a base with the hormone supplements to give bulk for better distribution among animals.

The addition of STILBESTROL to any supplement in no way changes its keeping qualities. At present, only one company produces the drug for feeding purposes, I. Lilly and Company, of Indianapolis. It is supplied to feed manufacturers under

(continued on page twenty)



In the foothills of the beautiful Blue Ridge Mountains, you'll find the Clemson House located in a unique setting — right on the campus of Clemson College. Here you will find all of the services of a great metropolitan hotel yet you will be far away from the noise of a large city. And you'll enjoy the beautifully landscaped grounds and the flower beds. The splendid accommodations and the excellent cuisine offered at the Clemson House are combined with warm friendly hospitality and fine service. The Clemson House is a gem among fine hotels, and the rates are almost unbelievably low. All rooms are air conditioned. Four dining rooms and the Tiger Lounge and Coffee Shop. There is swimming, fishing and golf nearby.

FRED L. ZINK, JR., Manager

On East Edge of Clemson, S. C., on U.S. 78, 123 and State 28.

Clemson
House



VAN LOTT, Inc.

430 Meeting St. West Columbia, S. C.

Distributors of
IRRIGATION EQUIPMENT

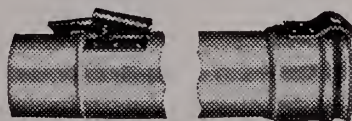
WEBSTER PIPE

JAEGER PUMPS

RAIN BIRD SPRINKLERS

BERKELEY PUMPS

G. M. DIESELS



WEBSTER PIPE CONNECTIONS

Big Oak Ranch

BRAHMA — HEREFORD — ANGUS
CROSSES

and

Registered BRAHMAS and HEREFORDS

Mt. Pleasant, S. C.

Ray M. Buck, Owner

BLUE CHEESE

B. L. Ragsdale, Dairy '56

Cheese is one of the oldest prepared foods in the history of mankind. The art of cheesemaking reaches back into the long forgotten centuries of the past, thousands of years before the birth of Christ. The Egyptians were among the earliest peoples to raise cattle. Milk and cheese were valued parts of their diet. Of special interest in the early chronicles of cheesemaking is the legendary story of Roquefort. This "cheese of kings and king of cheeses" was first mentioned in the ancient records of the Monastery of Conques, in the year 1070, and was pre-

sumably discovered by accident. Ten centuries ago on the lush Cevennes uplands near Roquefort, France, a shepherd left his lunch of barley bread and native cheese made of sheep's milk in a cool cave nearby to protect it from the hot sun. A sudden storm arose and he drove his flocks to shelter far from the cave where he had left his bread and cheese. Weeks later he again passed the cave and being a frugal man sought his abandoned lunch. The barley bread was heavy with black mold. Surprisingly, the cheese was covered with a delicate green

mold, and nibbling at it, he found it piquant and delicious beyond anything he had ever tasted. The Monks of Conques developed the shepherd's discovery, and this discovery has grown into today's production of Blue Mold cheese, which is similar to the Roquefort.

The Clemson Dairy Department started the processing of Roquefort-type Blue Mold cheese in 1942. They cured some 3,900 pounds of Blue Mold in the Stumphouse Mountain tunnel near Walhalla, South Carolina, from 1942 to 1945.

The old abandoned railroad tunnel is a famous landmark in the Piedmont area of South Carolina. The unfinished tunnel was dug before the Civil War when the Blue Ridge Railroad attempted to construct a line through and over the mountains to Knoxville, Tennessee. Clemson College purchased the tunnel in 1951 in order to conduct Blue cheese research and to develop procedures for manufacturing Blue cheese in South Carolina.

The Blue cheese project was halted by the second World War. Since the purchase of the tunnel, the Clemson Dairy Department has been manufacturing Blue cheese under the direction of Dr. D. M. Graham.

Dr. D. M. Graham has made many researches as to what are just the right ingredients. After trying milk from various breeds of cattle, he came to the conclusion that there was little difference. Blue Mold looks better on white cheese; therefore it is more satisfactory to use white milk.

The method of making Blue Mold cheese is similar to that of making cottage cheese. The whole milk is allowed to curdle and is then inoculated with mold which is grown on whole wheat bread. The cheese is hooped by packing it into round metal forms and it has to be turned three or four times during the first hour.

(continued on page 20)



The entrance to Stumphouse Mountain tunnel.



The MM Uni-Farmor — 6 harvest machines in 1!

Here's what happened to the brother who stayed on the farm

Everybody knows the farm boy who set off to seek his fortune in the glamorous city. You'll find his name gold-lettered on the doors of a million offices. You'll meet him daily on commuter's trains, on subways and buses, at board meetings, on political rostrums, running lunch counters and service stations. The transplanted farm boy made good, and his success has surely figured in the progress of our nation.

But what happened to his brother? What happened to the boy who *stayed* on the farm, to build *his* life after the pattern of his parents? *Plenty* happened!

The country brother knew he couldn't go on farming in the centuries-old tradition with muscle power doing the work. In the Age of Machines, the farm, too, had to be mechanized. Industry provided the machines, and by their use, the country brother transformed American Agriculture. With tractors instead of draft animals, combines instead of threshing rigs, mechanical corn pickers

instead of husking hooks, he *multiplied* his production. His modern, mechanized Farm-Factory now turns out food and fibre at a manhour rate never before approached.

What's *ahead* for the brother who didn't leave the farm? He hasn't even *started*! Machines like the Minneapolis-Moline Uni-Farmor illustrate the dramatic forward step thousands of American farmers are taking *right now*. With his Uni-Farmor, the modern Farmer-Businessman can harvest hay, silage, grain, beans, seed crops, and corn. He can handle all his harvest jobs *himself*, with the same, basic, self-propelled machine, and do every job in less time and at lower cost than ever before possible. Advances like that will mean new security and independence for the man who farms, an increasing abundance for all of us.

Minneapolis-Moline is proud to have served the brother who stayed on the farm. We're going to keep helping him build his future with machines like the Uni-Farmor. We figure American Agriculture is safe in his sure hands.



MINNEAPOLIS-MOLINE

MINNEAPOLIS 1, MINNESOTA

MM MACHINES WORK FOR THE WORLD



RECOMMENDED VARIETIES

(continued from page 12)

treatment should be provided for oats with 1/2 ounce of Ceresan-M per bushel.

Wheat does best on clay and clay loams of medium to good fertility. Coker's Coastal, Anderson, Coker 47-27, Taylor, and Atlas are the recommended varieties for South Carolina, and should be planted at a rate of 6 pecks per acre from November 1 to November 30. Testing results show that Coastal yields best at 34.3 bushels per acre with Coker 47-27 next in line producing 33.6 bushels of grain per acre.

Alfalfa is one of the most important forage crops in the United States. It should be planted on fertile, deep loamy soils having porous well-drained subsoils. Soils with high organic matter and mineral plant nutrients are better suited for growing of alfalfa. Seeding should be made with 25 to 35 pounds of thoroughly inoculated seed per acre; the time to seed is in September and October when moisture conditions are favorable. In South Carolina the profitable life of alfalfa is about 4 to 5 years, but some fields have produced profitable yields for more than 10 years. Varieties recommended include: Oklahoma and Kansas Common, Atlantic, Arizona Common (Coastal area only.)

Annual lespedeza is an important pasture and hay crop in South Carolina. Of the 125 species of the genus *LESPEDEZA*, there are only two species of annuals. Varieties of this crop consist of Kobe, Korean, Climax, Rowan (Resistant to nematodes). Lespedeza can be grown on most soil types at the rate of 40 pounds per acre, for seeding. Inoculation is usually not necessary before seed are planted in February and March.

Sericea, lespedeza, a perennial, like its relative, annual lespedeza, can be grown on any soil type in South Carolina. Again inoculation is usually not necessary when planting in March and April. Sericea should be seeded at a rate of 25 pounds of scarified seed per acre. This crop is fast becoming one of our more important grassland crops because it gives returns on soils not suited to alfalfa. Bicolor is valuable for soil protection, and for food and cover for wildlife. The seed are ex-

cellent quail food, and it grows well on any well drained soil.

A good pasture grass that is being pushed for growing in the state is Coastal Bermuda. This grass which is a hybrid of the common Bermuda makes more vegetative growth, grows later in the fall, is more resistant to leaf diseases and root-knot nematode than Common Bermuda. When planted alone or with its recommended companion crop, Crimson clover, this grass provides an abundant source of grazing and can also be used to make good hay. Coastal Bermuda may be planted from early spring until early fall in any type soil that is well drained. It can not be propagated by seed, but must be sprigged in 3- to 3½-foot rows, 2 to 3 feet apart in the row.

Dallis grass is one of the more important summer grasses for summer pastures in South Carolina. It will live during dry seasons and will come out quickly when there is sufficient rain. Dallis grass should be seeded in pasture mixtures at the rate of 10 to 15 pounds per acre. In the Piedmont area, Dallis grass should be seeded in early spring but in the Coastal Plains area successful seedings are made in the fall. It will stand heavier grazing than most grasses and still recover. A better stand will result when Dallis grass is planted on fertile, moist heavier soil types.

For winter grazing, tall fescue is being recommended in the varieties Alta, and Kentucky 31. It is a deep-rooted, strongly tufted, heavy feeder plant adapted to varieties of soils, growing best on heavy soils. Seeding should be done in September in the Piedmont section and in October and November in the Coastal Plains Section. When it is mixed with Ladino or Giant strains of White clover, fescue should be seeded at a rate of 10 to 20 pounds per acre. When it is grown with Ladino this perennial produces good quality hay and silage. When there is an abundance of plant food and moisture, it will sometimes make satisfactory growth and supply grazing during the entire 12 months.

The sources of the material found in this article were mimeographed reports made by the Agronomy Department of Clemson College and the **Agronomy Handbook for South Carolina**.

100-YEAR WAR AGAINST INSECTS

(continued from page 6)

held back the development of rich agricultural and industrial areas of the South until very recent times. As control of malaria mosquitoes has improved and the incidence of the disease has dropped, the South has come into its own agriculturally and industrially.

The chinch bug is credited by some authorities with having made Wisconsin a dairy state. In the early days, Wisconsin farmers generally relied on small grain crops like wheat, oats, and barley. For several years during the late 1800's, swarms of chinch bugs destroyed these crops. Many farmers became discouraged, abandoned grain, and took to dairying.

All insects, however, are not harmful to man. Pollinating insects — bees, wasps, butterflies, and several other groups—increase the yield of many crops. Pollination — distribution of seed-producing pollen from plant to plant—is no part of their purpose. It is accomplished accidentally as they go from blossom to blossom in search of nectar. The honey bee is by far the most valuable of the insect pollinators; it is a pollinator of some 50 crops.

About 10 years ago, several species of beetles were brought to this country from Australia to perform a weed-eradicating service for western ranchers. These beetles feed exclusively on the Klamath weed, a noxious range plant. They have cleared the weed from 100,000 acres in California, and have been released in Oregon, Washington, Montana, and Idaho.

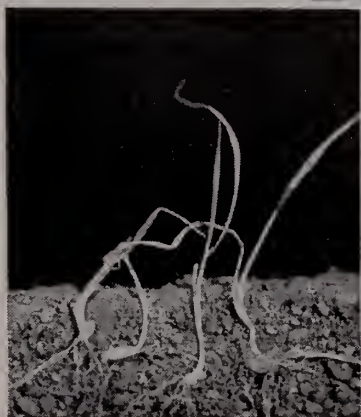
Methods of controlling insects have advanced remarkably since the days when entomologists could suggest only sanitation, screens, and fly swatters. It wasn't long ago that the fastidious ate from a table whose legs were set in receptacles containing kerosene to keep crawling insects from reaching the food. Most people kept a cloth spread over the food until they were ready to eat. Southern plantation owners employed small boys to shoo the insects away with large fans.

Scientists keep developing more effective weapons to use against insects. Entomologists investigate the biology and the habits of insects,

(continued on page 20)

CAN 3 SEEDS

OUT-YIELD 4 ?



A new method of seed and fertilizer placement is now available to farmers who are aware of the limitations and imperfections in grain drills which have remained unchanged for many years.

The new ALL-CROP Drill — a product of Allis-Chalmers, and the world's first quick-hitch, tractor-mounted drill — brings new speed, new accuracy, new performance to the seeding and fertilizing of grain, grass and legume crops.

Seed and fertilizer are accurately metered a new way . . . in twin bands side by side . . . faster . . . at uniform depth. Seedlings are side-nourished . . . protected from fertilizer burn.

This not only saves costly seed, but produces stronger stands . . . quicker catches of grass and legumes with grain.

The ALL-CROP Drill fertilizes and plants grain, grass, and legume seed . . . separately, or all in one operation. Can also be used as a fertilizer spreader alone.

With handy SNAP-COUPLER mounting and time-saving hydraulic lift, the economy and operating advantages of fully-mounted equipment come to the grain field . . . in the form of better stands, faster growth, higher yields! Here is another history-making contribution to better farming by Allis-Chalmers.

ALL-CROP and SNAP-COUPLER are Allis-Chalmers trademarks

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.



Ingenious Allis-Chalmers *Micro-Feed* accurately meters the seed . . . spaces kernels evenly in the row . . . at faster speeds. Positive *Force-Flo* system drills or broadcasts fertilizer evenly.



Dotted lines show how new Torsion-Spring design maintains uniform seeding depth in uneven ground. New "bellows-type" spouts allow far greater flexibility. Grass seed is broadcast or band-seeded.

TRACTOR-MOUNTED
ALL-CROP Drill
FOR WD-45, WD, OR CA TRACTORS

100-YEAR WAR AGAINST INSECTS

(continued from page 8)

searching for weak links on which control efforts can be concentrated. Chemists discover new insecticides. Engineers design improved insecticide applicators. Plant breeders help develop insect-resistant crop varieties. Medical doctors and veterinarians have an important part in the fight against insects that attack man and animals.

Entomologists operate a warning service for farmers. Survey teams keep check on insect buildups and new infestations. Their reports are made available to farmers through newspaper items, radio announcements, and publications. State entomologists gather information about the insect situation in their states; they issue bulletins to the press and relay reports to county extension agents. Federal entomologists consolidate State reports into a weekly report, which is distributed to newspapers and agricultural leaders throughout the country.

MARKETING OUTLOOK

(continued from page 8)

margins. A marketing margin may be defined as that spread between what the producer receives for his product and what the consumer must pay for the same product. It is an estimate of the charges made by marketing agencies for assembling, processing, transporting and distributing the farm products.

When the problem of buying high priced cuts from low priced beef is examined, it is found that though that steak may cost 97 cents per pound, there are some parts of a steer for which there is no return, some which will yield a very small return, and a very small amount that will bring 97 cents. Since all of these parts cost 30 cents a pound on hoof, in order to clear his investment and realize any return at all, a packer or a retail butcher must sell his steaks at a high price. If that steer were 100 percent t-bone steaks, there would be a basis for argument. Similarly, if that cotton could be ginned and sold as shirts, there would be a basis for wondering about the higher price of shirts. But that cotton must not only be ginned, it must be processed, woven,

dyed, and made in shirts. That cotton travels a long way from the freshly ginned bale before it becomes a chartreuse sports-shirt. These people must be paid for their services, too. Just think how much a shirt would cost in time and labor if the cotton farmer took over this marketing margin and produced a finished product!

First, he would have to know the technique. Though he can grow the best quality cotton, he probably would know vaguely how that cotton becomes a shirt. Next, the farmer would have to have the equipment to transform his cotton, and finally he would have to get out and actually sell his product on the street corner, from door-to-door or by some other method. All this time which he is spending making and selling a cotton shirt could well be spent in producing more cotton and allowing someone else to take over the manufacturing and sales responsibility.

Another problem confronting the marketing outlook is that of expanding our markets for farm products. This would come about in finding new outlets for our livestock, grain, etc., as well as by finding new products which to put on the market.

STILBESTROL—NEW DRUG

(continued from page 14)

the trade name **Stilbosol**, a pre-mixed or cut-down form for safety in handling and for greater certainty of even distribution in finished supplements.

Right now it is clear that age, sex, castration and both type and amount of feed complicate the results. Since **STILBESTROL** is now in cattle feeding, it should be used with extreme care. More of the existing problems should be answered before the farmer should attempt the use of this drug on a large scale. It would be like placing all of your eggs in one basket. The risks are many. This drug at the present very definitely seems to have a place in cattle feeding in the future. However, it should not be thought of as a highly concentrated feed. **STILBESTROL** has practically no nutritive value at all as a feed, and it **positively** should not be used as a substitute for feed.

BLUE CHEESE

(continued from page 16)

The next day the cheese is salted and must be rubbed with salt once daily for the next five days.

The cheese is waxed, punched, and carried to the Stumphouse Tunnel for curing. It is left there for about six to eight weeks. Then the wax is removed and the cheese is cleaned and weighed. The cheese is rewaxed and put into a 38" room for three to four months.

The production now is about four hundred pounds a week which is a very small amount when compared to the demand.

When the dairy section of the new Food Industries Building is fully completed this fall, Dr. Graham expects to make about one thousand pounds of Blue cheese per week.

Blue Mold cheese is available now at the Dairy Department Retail Store just south of the Dairy Building on the Clemson College Campus.

HEARD HERE AND THERE

College Student's Beatitude

"Blessed are they that run around in circles for they shall become wheels."

* * * * *

Dinner guest at the turkey carving. "will you pass the nuts, Prof?"

Preoccupied Professor: "I suppose so, but I really should flunk most of them."

* * * * *

An Aggie's father paid his son a surprise visit. Arriving at 2 A.M., he banged on the door of a fraternity house on Clinch Avenue. A voice from the second floor yelled, "Whatya want?"

"Does Bracy live here?"

"Yeah," the voice answered, "bring him in."

* * * * *

Statistician: "Every time I draw a breath some human being passes into eternity."

Heckler: "They say listerine is really good for that."

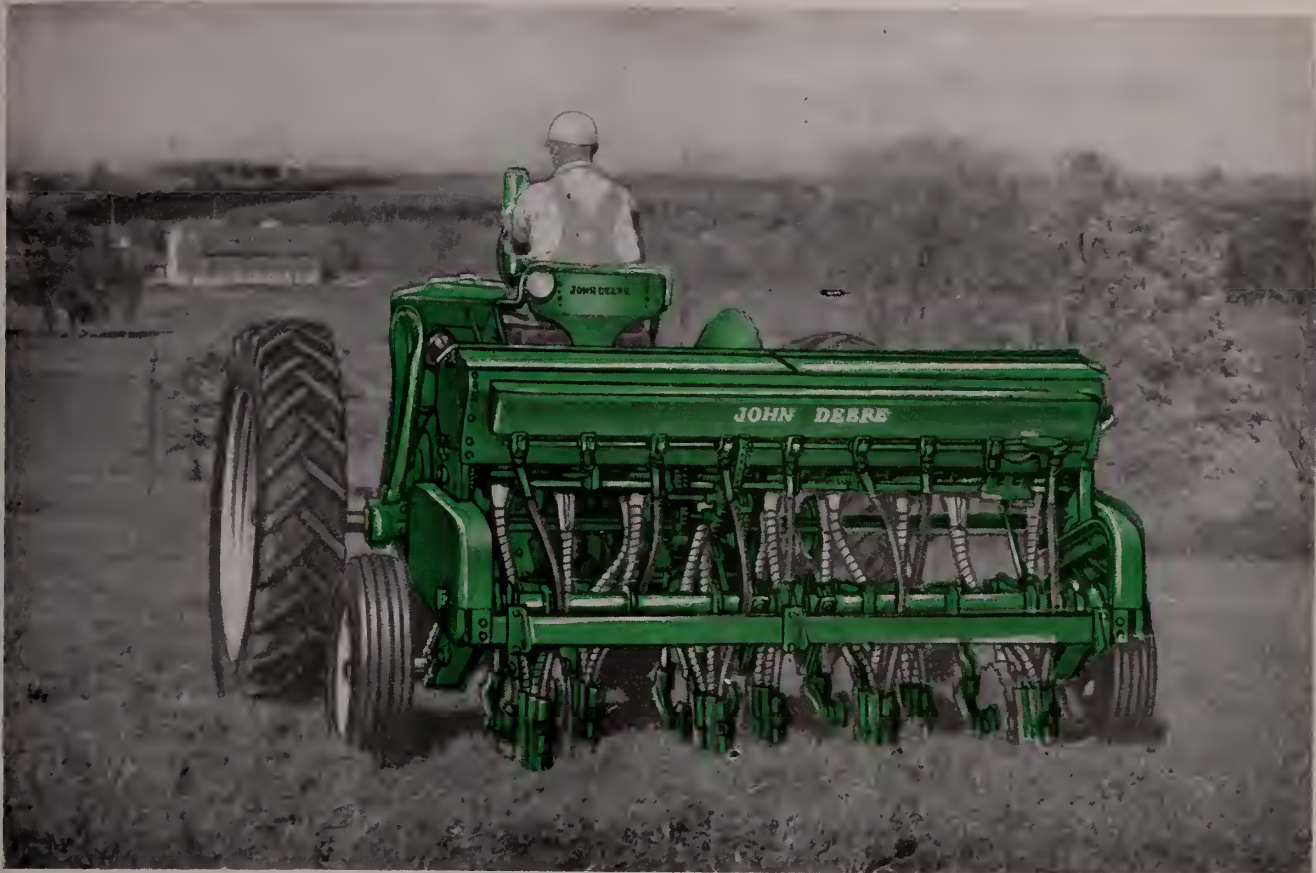
* * * * *

It Means Something

When a man meets a lady and looks her in the eye, she'd better do something about her figure.

* * * * *

Now that Mt. Everest has been climbed, man has explored everything except the bottom of a woman's purse.



The Grassland Drill Helps Mine the "Green Gold"

JOHN DEERE engineers have been deeply conscious of the need of farmers for specialized equipment to help them realize the greatest benefits from grass. A typical result of their efforts is the John Deere Grassland Drill which already is giving farmers and ranchers everywhere greater access to this "green gold" by making it possible to reseed and fertilize pastures and rangeland where seedbed preparation is impossible or impractical. The farmer benefits through longer grass periods for his livestock, the improved health of his animals, and better quality animal products. Better use is made of expensive fertilizer, resulting in greater plant population with less seed.

The grassland drill is one of the many John Deere machines designed to help farmers throughout the world to mine the wealth of "green gold."



JOHN DEERE • MOLINE ILLINOIS

QUALITY FARM EQUIPMENT SINCE 1837

Enjoy both sides of smoking pleasure!

Feel that mildness  Taste that flavor
—that's a Cavalier!



Graduate to Cavaliers! Light up and *feel* that Cavalier mildness—so light, smooth and easy! Try a pack of Cavaliers today. See if

you don't agree with thousands of smokers who compared king-size Cavaliers with the cigarettes they'd been smoking. Yes . . .

YOU CAN'T help but notice — on campus and off — smart smokers are shifting to king-size Cavaliers. Try them and find out what a pleasure smoking can be when the smoke *feels* so mild and *tastes* so good!

Cavaliers give you the world's aristocratic tobaccos blended in an extra length. There is no better natural filter! There is no finer source of delightful flavor! Today's the day. Get Cavaliers . . . get extra mildness where it counts — in the *feel* of the smoke!



CAVALIERS ARE KING-SIZE
yet priced no higher than leading
regular-size cigarettes!

See why, among thousands of smokers interviewed . . . **8 OUT OF 10 SAID**

CAVALIERS ARE Milder!

R. J. Reynolds Tobacco Co., Winston-Salem, N. C.

AGRICULTURAL SETTLEMENT DEPARTMENT
CLEMSON COLLEGE LIBRARY

AGRICULTURAL SETTLEMENT DEPARTMENT
CLEMSON COLLEGE LIBRARY

The Agrarian

OFFICIAL STUDENT PUBLICATION

CLEMSON, S. C.

THE CLEMSON A & M COLLEGE

MAY 1955



VOLUME XIV

NUMBER 4

BULK RATE — U. S. POSTAGE PAID
PERMIT NO. 4 — CLEMSON, S. C.

SERVING THE FARMERS
IN NORTH AND SOUTH
CAROLINA SINCE 1906



Planters
Fertilizer & Phosphate Co.

CHARLESTON, S. C.

CHARLOTTE, N. C.

THE AGRARIAN

Volume XIV

The Clemson Agricultural College

Number 4

Niles C. Clark, Jr.
Co-Editor

Bennie Wiggins
Associate Editor

Ray M. Buck, Jr.
Co-Editor

John D. Patrick
Advertising Manager

Chauncey D. Smith
Business Manager

Thomas E. Hayden, Jr.
Circulation Manager

E. J. Wright, Jr. Feature Editor D. B. Anthony News Editor
Walter Ramage Dept. Editor

Departmental Writers—

Reuel McLeod, Jr., Jack Langston, Fred McLaughlin, Jr., Clyde E. Woodall, Weston Weldon, Watt E. Smith, II, D. B. Anthony, A. G. Neil, Jr., Louis Philhower, Richard F. Elliott, M. I. Fralick, Robert Donaldson, Legare Walpole, Lawton Wofford, W. H. Faver, Bill DuBose, B. L. Ragsdale, James C. Stevenson and Hayward Ramsey.

Advertising Staff—

Louis D. Parsons.

Circulation Staff—

Edward Corley, Earl Little.

Advisory Staff—

B. E. Goodale and T. L. Senn.

THE COVER: With the recent decline in cattle prices has come a large amount of criticism of beef production. Even though the cycle of prices for cattle seems to be at a low level, beef cattle remains the best method to market roughages and other farm products which might not otherwise be utilized. Let's use more cheap feed for our cattle to show more profit. Our cover shows a picturesque herd in lower South Carolina.

(Photo courtesy Extension Service)

IN THIS ISSUE

Career Opportunities in Agriculture	3
Crossbreeding — For more Profit	4
Essentials for Successful Broiler Production	6
A Good Insect Control Program	8
Switzerland — Garden Spot of Europe	9
Between the Furrows	10
The Men Who Guide Us	12
The Hardwood Problem in South Carolina	14
Farmpond Site Selection	16

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education, and sponsored by the South Carolina chapter of Alpha Zeta. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

AGRARIAN PHILOSOPHY

Niles C. Clark, Jr., Co-Editor

Another school year has almost passed, and with this issue, the old "Agrarian" staff will turn the reins over to the new staff. A very capable and energetic staff has been selected for next school year, and to these men we give our best wishes for a successful year. Donald Anthony and Elbridge Wright will be filling the Co-Editor positions, and we feel that they will be doing an exceptionally good job.

Our thanks go to the many persons who have contributed toward printing our magazine this year. To our advertisers we wish continued success in the coming years. We also would like to thank the persons who have made contributions to the "Agrarian."

It is our hope to continue mailing the magazine to students, farm families, libraries, and schools with no charge in the form of a subscription rate. This creates a hardship due to the fact that almost all advertising fees must be used for printing and mailing, thus leaving almost no funds with which to buy equipment and supplies. However, as long as we are able to make ends meet, we hope to continue mailing the "Agrarian" to anyone who desires it.

As a parting thought, we would like to leave this anonymous poem which, we think, contains much truth.

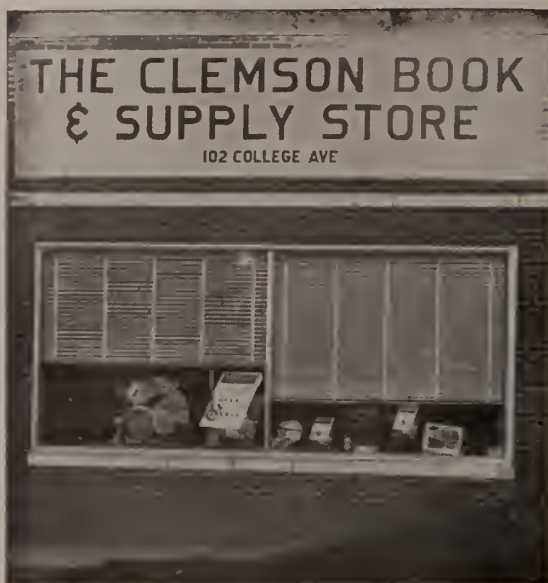
THE WINNER

The man who wins is an average man
Not built on any peculiar plan
Nor blest with any peculiar luck—
Just steady and earnest and full of pluck.

When asked a question he does not guess
He knows the answer, "No" or "Yes"—
When set a task that the rest can't do
He buckles down 'til he puts it through.

So he works and waits 'til one fine day
There's a better job with bigger pay
And the man who shirked whenever he could
Is passed by the man whose work made good.

For the man who wins is the man who WORKS
Who neither labor nor trouble shirks
Who uses his hands, his head, his eyes—
The man who wins is THE MAN WHO TRIES.



Two familiar old faces always welcome
you back to the campus.

CLEMSON BOOK STORE
Official College Book & Supply Store

L. C. MARTIN DRUG COMPANY
Serving Clemson Men Since 1908

W. B. Camp & Sons, Inc.

Bakersfield, California

and

Gaffney, South Carolina

Buckfield Plantation

Yemassee, South Carolina

Career Opportunities in Agriculture

Agriculture is the basic industry. A recent study reports: "Of 62 million employed Americans, 25 million work somewhere in Agriculture — 10 million on farms, 6 million produce for and service farmers, and 9 million process and distribute farm products. About 40 percent of all jobs are in agriculture — jobs important to everyone, jobs with futures, jobs with financial and personal rewards!"

Agriculture needs college-trained men in farming and in numerous occupations in agricultural research, agricultural business, agricultural industry, agricultural education, agricultural communications, agricultural conservation, and agricultural services. The present supply of college graduates is too small to meet the demand.

There are more than 500 occupations in the eight major areas of agricultural employment. It was recently found that the eight areas would employ about 15,000 new college graduates each year. Our land-grant agricultural colleges, such as Clemson, are now graduating around 8,500 students each year in agricultural courses. This means that we now have about two jobs for each graduate. Some of the job opportunities in each of the eight major areas of agricultural employment are listed below.

Farming—About 2,000 new college agricultural graduates are needed in this area of work each year. Farming is the most important job in agriculture, and it is becoming more and more complicated. The different types of farming which a young man may select include: general, dairy, poultry, beef, swine, cotton, tobacco, fruits, vegetables, seeds, and grain.

Agricultural Research—Each year, agriculture needs 1,000 new college graduates entering this field of work. Research seeks new information of value in solving agricultural problems. Opportunities in research are available in jobs related to production, marketing, economics, agri-

J. W. Jones, Director Agricultural Teaching

cultural engineering, processing, new products, by-products, and conservation.

Agricultural Industry—3,000 new graduates can be used each year in this area of employment. Farmers depend upon industry for most of their supplies and equipment. Industry needs outstanding young men with thorough agricultural training. Graduates are needed in industries involving machinery and equipment, food processing, grain and seed pro-



DR. JONES

cessing, meat and poultry packing, fertilizer and lime, pesticides and herbicides, feed manufacturing dairy processing, and forest products.

Agricultural Business—Each year business can use 3,000 new college graduates. Agricultural businessmen finance, insure, buy, sell, store, and distribute agricultural products. Specific jobs may be found in banking and credit, insurance, farm management, cooperative management, land appraisal, marketing, storage, transportation, and private businesses.

Agricultural Education—3,000 new agricultural graduates can find work in the field of education each year. It has been said that teaching is America's greatest enterprise. Job opportunities are available in college teaching, agricultural extension, vocational agriculture, governmental agencies, farm organizations, industrial agencies, and business firms.

Agricultural Communications—500 new college graduates are needed each year in the field of communications. Some very good opportunities exist for students with good training in both agriculture and communications. Jobs are available in farm reporting, newspaper and magazine work, market reporting, publications, photography, motion pictures, radio, television, advertising, and exhibiting.

Agricultural Conservation—Present estimates indicate we need 1,000 new graduates each year in agricultural conservation. This area of employment provides opportunities for important services in the conservation of our natural resources. Specific careers are available in the conservation of soil, water, forests, fish, and wildlife.

Agricultural Services—About 1,500 new graduates are needed each year in agricultural services. Government and private services in agriculture provide some very good career opportunities. Jobs are available in work related to plant and animal inspection, fertilizer and seed inspection, quality control and grading, foreign agricultural service, and veterinary medicine.

The School of Agriculture at Clemson offers college training leading to employment in most of the occupations which have been described. Four-year courses of study are available in Agricultural Economics, Agronomy, Animal Husbandry, Botany, Dairying, Entomology, Horticulture, Poultry, and Agricultural Engineering. The curriculum in Agricultural Engineering is jointly ad-

(continued on page 12)

Crossbreeding -- *for more profit*

R. F. Elliott, A.H. '56

During the past few decades there has been increased interest in and acceptance of hybrid plants. However, many people don't realize that the law of heterosis or "hybrid vigor" is a basic law of genetics just as Newton's laws of motion are basic in physics. It isn't limited to plants, but applies to animals as well.

This heterosis is the first and most important reason for crossbreeding commercial meat production. There is another reason for crossbreeding, which is older and better known. That is the crossing of unrelated animals, each having strong and weak points, with the purpose of combining the strong points. This second reason is largely responsible for the crossbred breeds such as Santa Gertrudis in cattle and Hamprace in hogs.

Crossbreeding Hogs

It is in pork production that the effects of hybrid vigor are most clearly seen. From the standpoint of hybrid vigor alone, the following advantages have been shown experimentally in favor of crossbred over purebred pigs: (1) There are fewer stillborn pigs, (2) Pigs are larger and more vigorous at birth and consequently a larger percentage reaches weaning age, (3) The pigs weigh

three to four pounds more at weaning, (4) The pigs reach market weight ten to fourteen days earlier than purebred pigs and (5) Crossbred pigs require up to thirty pounds less feed to reach market weight.

From the standpoint of crossbreeding for type as well as for hybrid vigor, there has been much crossbreeding of bacon type hogs with meat type hogs to produce a more intermediate hog. The unusual prolificness of some of the bacon breeds is another strong point in favor of using them in crossbreeding.

There are two general procedures which are practical in hog crossbreeding. These are not cut-and-dried procedures, but are the result of an effort to divide innumerable methods into two general classes. The first and oldest method is the practice of selecting sows from one breed and boars from another breed. The sows should be of a breed known for large litters, mothering and milking ability. The boars should be from a breed which excels in gaining ability, early maturity, and market quality. Each breed should supplement the other as much as possible in type. The problem in this system is the replacement of sows. Purebred or grade

sows must be bought or raised separately.

The second method is relatively new and promises to be popular because it solves the problem of the first method. In this method boars of a breed A are bred to sows of a breed B. Crossbred gilts AB are bred to a boar of breed B. Gilts of this cross are bred to a boar of breed A, etc. This method is also advantageous in that it makes use of hybrid vigor in the sows as well as in the pigs.

Crossbreeding Beef Cattle

There has been less work done on crossbreeding cattle than with hogs. However there is definite evidence that crossbreeding in beef cattle does result in a certain amount of hybrid vigor. The most important advantages of crossbred calves are: (1) More vigorous calves, and (2) More rapid gains.

However, due to emphasis placed on color markings on cattle, both by buyers and sellers, and due to the high cost of good sires, it is doubtful whether the average beef farmer in the Southeast would find crossbreeding a profitable practice.

Crossbreeding Sheep

Crossbreeding is practiced very extensively in commercial sheep flocks. The most common practice is that of keeping fine woolled ewes for production of a high grade wool and breeding a meatier typed breed to them. The lambs are consequently large and fast-growing. This system demands that rams and ewes be purchased as they are needed or that two flocks be managed.

The animal breeder must remember that there is no magic in crossbreeding. Genetically speaking there are no new genes created, but new combinations are created. In view of this the importance of high quality foundation stock and breeding stock is clearly realized. Thus the crossbreeder does not replace the purebred breeder, but actually increases his importance with the amplified importance of purebred sires, the production of which is the basic purpose of the purebred breeder.



Hogs clearly show advantages to be gained by crossbreeding.

insects

YOU SHOULD KNOW

*How to Identify
These Crop Destroyers*



SWEETCLOVER WEEVIL

Sitona cylindricollis Fahr.

Sweetclover weevils are small, slender, drab gray snout weevils. They feed on tender plant leaves and stems, eating out circular notches. Natives of Europe, these insects were discovered in Canada in 1924, and have spread at a rate of more than 100 miles a year. They now extend over most of the United States and Canada. They move in armies of a hundred or more per square foot.



ALFALFA WEEVIL

Hypera postica (Gyll.)

The Alfalfa weevil is one of the major insect pests of alfalfa in the United States. It causes greatest damage to the first crop. Adult females lay from 600 to 800 eggs in alfalfa stems. An imported wasp is a parasite of the larvae, but it does not destroy enough second crop weevils to prevent a large build-up of weevils the succeeding year.



SALT-MARSH CATERPILLAR

Estigmene acrea (Drury)

Mature caterpillars are either light green or dark brown. They attack alfalfa and other crops and travel in hordes. The adult female moth lays as many as 1000 pale yellow eggs from which hatch tiny dark brown caterpillars. There are three generations of pests in the southern localities, two in the Midwest, and only one in New England. In the South, the third generation causes the greatest damage.

toxaphene

DUSTS • SPRAYS

*For full color booklets showing
these and other insects write to Hercules*



Essentials for Successful Broiler Production

Lawton Wofford, P.H. '57

Proper sanitation is one of the biggest factors of success in raising chickens. A chicken likes to have clean surrounding just as a human does. Before obtaining a new lot of chickens the chickenhouse should be cleaned thoroughly. The first thing to do is to take out all the equipment that has been used in raising the previous lot. Having done this, haul out all the manure and shavings. The next thing is to take a garden hose and wash the cobwebs and dust out. The reason for this is to help get rid of disease germs that the previous group of chickens might have left. Following this, spray the house with a disinfectant that will kill all that the general cleaning did not kill. The next step to perform is to have fresh shavings put in the house. The shavings should be scattered evenly all over the house so that they are about six to twelve inches deep.

After the house is cleaned out, the feeders and waterers should be washed and disinfected before they are put back into the house. The reason for this is that feeders and waterers which have been used by older chickens can transmit diseases to the younger chickens very easily. Waterers should be disinfected daily, for chickens like to have fresh clean water just as you and I do. The waterers get polluted with dust and dirt from the chickens jumping and

flying over them. When the chicken takes a drink of water, its beak is filled with feed, which gets into the water too. Disinfecting and cleaning the waterers daily keeps impurities out of the water and kills germs.

Good housing can determine the outcome for a flock of chickens. A chicken house should be large enough for the number of chickens you plan to put into it. If the chickens are crowded in a house, they will not grow as fast as they would otherwise. The house should be large enough to give each chicken about one square foot of floor space. Good lighting is a very important factor in having proper housing for chickens. The house should be situated so that the sun will shine in it the better part of the day. During the summer when the day are hot and chickens don't eat much. Lights should be burned at night in order that the chickens will eat when it is cool. Feed troughs should be arranged so that there will not be a shadow on the feed. If there is a shadow on the feed in the troughs the chickens will not eat much feed out of that trough. Burning lights at night will help to keep out rats and other animals that might kill or frighten the chickens.

A chicken house should be built so that it has proper ventilation. In this way chickens will have fresh air all the time. Avoid drafts on the chickens because drafts predispose chickens to colds. During the winter months curtains or windows should be put over the wire openings to keep the cold air out. During the summer months, windows and doors should be open so that the chickens can be kept as cool as possible. The chicken house should be built so that there are no leaks in the roof. A good foundation is also necessary so that surface water will not run into the house. If the litter gets wet or damp, there is a chance for diseases to take hold.

Chicken houses should have wire over all the windows and any other

openings. This will prevent hawks, owls, and other birds from flying in the house and frightening the chickens or bringing disease or parasites. If chickens become frightened, they may pack up on each other and smother to death. Wire should also be put about a foot below the foundation to prevent rats from going under the foundation.

Sound management is very important to a grower. You as a grower, should get a good strain of chickens. A good broiler chick will grow faster; therefore it can be sold sooner which means a saving in feed, labor, fuel, and more efficient use of equipment. No matter how much the chicken is fed it may not grow fast, feather well or have good market conformation. You should keep accurate records of your expenses. Each day you should check to see if there are any dead chickens. If you find any, you should make a note of the number dead and properly dispose of them. In this way you will know how many chickens you have at selling time. Another thing which should be kept as a matter of record is how much feed the chickens eat each day. As they grow older, they should consume more feed each day. If you notice a drop in feed consumption, this can be a sign that the chickens are getting sick and need treatment.

Wise feeding is very important to the success of raising chickens. When a truck load of feed is bought for your chickens, you should have a feed room in which to store it. This feed room should be completely dry. If the feed gets wet, it will sour and will not be useable. The feed should not be opened until you are ready to use it. The best way to distribute the feed is to use a scoop and a bucket. You should never fill the feeders more than half full, because the chickens will waste the feed by beaking it out of the feeders into the litter. The feeders should have reels on them to prevent the chick-

(continued on page 12)



Careful supervision and management are of prime importance.

52 YEARS OF SERVICE
TO SOUTHERN AGRICULTURE



"The South's Foremost
Seed Breeders"

**COKER'S PEDIGREED
SEED CO.**

HARTSVILLE S. C.



Write for Catalog and Prices

PENDLETON FERTILIZER

Issaqueena Feed
Cottonseed Products
Certified Cottonseed
Insecticides

PENDLETON OIL MILL
PENDLETON, SOUTH CAROLINA



MT. VIEW MILLING CO.

Manufacturers
of
High Grade Feeds

USE OUR PRODUCTS AND HELP
CONSUME LOCAL GRAIN

PHONE 532 SENECA, S. C.



Hours 11:00 a.m. — 12:00 p.m.



DAN'S

For the BEST in
Hamburgers and all
types of Sandwiches

A Good Insect Control Program

A Very Important Phase of Cotton Production

Jack C. Langston Ent. '56

Good insect control is a necessity in any cotton production program, whether it is mechanized or not. The returns per acre are dependent to a large extent on the yield. This in turn is certainly dependent upon insect control. Injury by insects is serious whether a part or all of the fruit is damaged. Cotton plants stripped of part of their fruit by insects tend to divert most of the plant food into rank vegetative growth which deters yield.

It is evident that a good insect control program should include an accurate spraying or dusting schedule with such things to be considered as: concentration of poison, nozzle adjustment, pressure, kinds of poison to be used and infestation surveys to check on the poisoning program.

Good insect control is not a rocking-chair job. The county agents, insecticide and implement dealers and many others can help plan for and execute a control program at the county level. But the farmer is the only one who can make sure that the job is actually done. At the

county level, it is important that the program be organized so that accurate, continuing surveys are made of cotton insect conditions. This information is especially useful in helping insecticide dealers maintain adequate stocks of materials. Overstocking can be a serious financial problem for small dealers. Most dealers understock rather than be caught with too much insecticide on hand at inventory time, and this can result in shortages that will be very costly to farmers. Surveys at the county and community level are essential. But for effective insect control at lowest cost on the individual farm, each field on each farm must be checked regularly. In general, this is a job that only the farmer or someone he hires can do.

Experience indicates that the grower's best investment in cotton insect control is "a new pair of shoes to replace those worn out in scouting." That is why so much emphasis is being placed on training the farmer in scouting procedures, and on developing commercial scouting services.

It is only within the last few years that systematic cotton insect survey procedures have come into existence. But we already have rather uniform standards for surveys, and they are carried out on a comparable basis through the Cotton Belt. The idea is to provide a continuous picture of insect infestations, area by area and state by state. This is done through a cooperative scouting program supported by USDA and the State Experiment Stations. Often, commercial entomologists are a part of the scouting program.

Survey data is useful to many persons. Extension entomologists and county agents use the information to keep their control program closely geared to shifting insect conditions. Insecticide manufacturers and dealers are able to have the right materials at the right place at the right time.

Farmers, of course, are the biggest beneficiaries of all. The survey keeps them posted on the insects current-

ly doing damage in their respective localities; it keeps them on the lookout for these pests and helps head off damage before it occurs.

Excellent results can often be obtained when a whole community organizes itself to fight cotton insects. In a Texas community, for example, farmers and others got together and decided upon a uniform planting date, kinds of poison to use, and who would supply equipment for application. When cotton reached the four-leaf stage, the county agent met with the group on the leader's farm, and checked the insects in the fields at that time. Each week the group met on a different farm. If any farmer reported a "hot spot," everyone went to check it.

The payoff for community action was obvious by late May and June. The organized grower's cotton was far ahead of cotton in surrounding areas in size, uniformity and early fruiting. The group had the first county bale, and growers were two weeks ahead in completing their stalk destruction. A program such as this may not be practical in your county but by following recommended practices and working closely with your County Agent or Experiment Station, the same results can be obtained.

Cotton insect surveys are testimonials to the effectiveness of well-planned and executed poisoning programs. It has been found that early insect control continued through the growing season has simplified late-season control and has aided in setting the crop or the plants. In the early part of the season, sprayable insecticides are often applied when cultivating. Later in the season, and when dusts are used, they are applied as a separate operation. The effective application of insecticidal dust is restricted to those hours when little or no wind is present to cause the dust to rise or blow away, a condition that more often exists during the hours between sunset and sunrise. On the other hand,

(continued on page 20)



(Photo courtesy Extension Service)

Dissected boll showing grub or larval stage (left) and the pupa, or resting stage, (right) of boll weevil.

Switzerland - garden spot of Europe

International Farm Youth Exchange Delegate's Observation

B. S. Wiggins, Dairy '55

It is hard for us to realize that in Europe there is still a very peaceful corner amid areas of low standards of living and poverty-stricken people. An area which is unspoiled by the hardships of war with no concern for inflation or depression, or where there is no anxiety for the welfare of the state. Here, in the midst of upheaval and worry, poverty and distrusts, we find SWITZERLAND as the rose in a bed of thorns. There is no nation in the world that is on an even keel with the United States in standards of living, soundness of currency, and economic growth, but the "Little U. S. of Europe," Switzerland. We, here in the United States, often wonder just how certain other nations live and survive under such conditions as are found in Europe. In the following paragraphs I am going to try and give you a glimpse of life in SWITZERLAND. I am limited by time and space, but nevertheless I hope you may get some idea from this writing as to what SWITZERLAND is really like.

Part of the beauty of SWITZERLAND is her very barrenness. The high mountains which form the most impressive part of the landscape mean that a considerable part of the land is bare rock, covered with ice and snow, and never to be brought under the plow. The exact figures are even startling; of the 15,950 square miles (just half the size of South Carolina) which makes up the area of SWITZERLAND, only three quarters is productive, while nearly 4000 square miles cannot be used for agriculture or for forestry. The Alpine region occupies about three-fifths of the country, the Jura Mountains 10 percent, and the modest remainder of less than one third makes up the lowlands, which are mountainous to the South Carolinians way of thinking.

It might almost be said that the beauty of this country is the cause of her poverty. If we consider mineral wealth it is absolutely true, for apart from the rocks and soil which

are put to industrial uses, there are no minerals worthy of mention. The miserable small coal mines of former days were set working again only because of the emergency of World War II. This was only in the emergency and it cannot be considered a major economic factor. There is, however, one gift of nature which, in combination with modern technology, can be fully exploited, namely—water-power. More than 6,000 power stations, some 300 of them on the largest scale transforms the energy of mountain streams and rivers into electricity. This effect can be seen all over the country in that

impossible to raise the public economy of the country to such a high economic level. Only a free people could attain this standard of living and only as a free state could SWITZERLAND, remote from the sea coast and without her own sources of raw materials, succeed in commanding the respect of the whole world and in taking a prominent part in world trade. We have therefore every reason to regard the independence of the Swiss people as having the significance of a "staple raw material."

The Swiss are a people rooted in the soil from the standpoint of their



Dairying is widespread and very important to the farmer

there are very few houses or barns which are not electrified and also because of this abundance of power the extensive railroad system is approximately 99 percent electrically operated.

There is one vitally important raw material which cannot be overlooked and that is Liberty. The fact that SWITZERLAND, so insignificant a country from the economic standpoint should have become the home of 4.7 million people, is due entirely to intelligence and hard work. Without the peculiar political attitude of the Swiss, it would have been quite

interest and population. The problem of how to support a population of 4.7 million, only three-fifths of whom can be fed on the produce of their own soil. This has made the Swiss look far afield, in trade, commerce and the economic activities in which they have proved their worth. The industrialization of the nation has had a gigantic effect upon the stability of the economy of the country. Yet the Swiss have by no means abandoned the land. Agriculture and forestry account for one fifth of the wage-earners, and together with

(continued on page 18)



LIVESTOCK JUDGING TEAM ENTERS SOUTHEASTERN COMPETITION

The Clemson Livestock Judging team entered the Southeastern Inter-collegiate Livestock Judging Contest held at Auburn, Alabama, on April 22. The team placed third in swine, sixth in sheep in competition with sixteen other Southeastern teams. The team members were James R. Hill, John Alexander,

gomery, Alabama. Here the team got acquainted with many of the outstanding Hereford breeders of the country and heard many outstanding discussions of livestock problems such as "Herd Management" and "Research on Dwarf Cattle." A demonstration of judging live animals was given and the following day the carcasses of these animals were placed according to quality, conformation and finish.



Judging team members during practice session. Left to right—Witherspoon, Prof. Hendlin, Marshall, Young, Smith, McDaniel, Bowen, Alexander, Hill.

James L. Smith, George W. Bowen, Robt. C. McDaniel, James E. Young, and A. H. Marshall. The team is coached by Prof. Dale Handlin of the Animal Husbandry Department.

The University of Tennessee team placed first in the entire contest. Some of the other states represented were Florida, Georgia, Kentucky, Mississippi, Louisiana, and Virginia. The contest consisted of 12 classes of livestock: 4 classes of hogs, 2 classes of sheep, and 6 classes of cattle.

While on the trip the team visited the University of Georgia, Alabama Polytechnic Institute, and the North Auburn Experiment Station farms. Also a highlight of the trip was three days spent at the sixth National Hereford Congress held at Mont-

ALUMNI NEWS

J. H. Fulmer, Horticulture '53 is now doing graduate work here at Clemson. He is majoring in Entomology and minoring in Horticulture.

Dr. Ben Rogers, V.A.E. '46, received his Master's Degree at the University of Minnesota and his Ph.D. from the University of Maryland. He did outstanding work in Washington State with growth regulator sprays on apples and he is now at the Hancock, Maryland Field Laboratory. Dr. Rogers is originally from Rockbuck, S. C.

Don Dunlap, Horticulture '54, after a year of graduate work at Virginia Polytechnic Institute is at Fort Benning, Ga.

F. B. Cates, Horticulture '55 is taking graduate work here at Clemson.

Hugh S. Jenkins, Horticulture '53, after two years of service is taking graduate work here at Clemson.

Elliott T. Wooten, Poultry, February '55, is to go into the Armor Branch of the Army at Fort Knox, Kentucky.

Jimmy Henderson, former Co-Editor of the Agrarian who graduated in February, '55, is employed by the Carnation Company, Houston, Texas. He will be employed by them until he enters the Air Force, and, upon completion of his active duty, will return to the company.

Jack Moore, Dairy, January '54, has resigned his position with the Atlanta Dairy Cooperative, Atlanta, Ga., to become the assistant manager of Sumter Dairies, Sumter, S. C.

James E. Cushman, Dairy '51, has resigned his position effective June 1, 1955, as Director of the South Carolina Dairy Commission. He has purchased Shamrock Dairy, Chester, S. C., which he will manage.

V. B. Benjimonson, Dairy '52, has been promoted to Assistant to the Director of Production, Southern Dairies, Charlotte, N. C.

W. R. Bellamy, Dairy, June '53, will be discharged from the army in September and will enter Clemson as a graduate student in the Dairy Department.

Dr. E. L. Corley, Dairy '49 is on the staff of the Dairy Husbandry Department at the University of Wisconsin, Madison, Wisconsin.

Jack G. Krause, Dairy, August '52, is Assistant County Agent at Shelby, N. C.

Prof. J. T. Lazar, Dairy, '43, will receive his Ph.D. in Dairying at N. C. State in June.

James B. Pettigrew, Dairy, Feb. '49, recently resigned from his position at Coble Dairy Cooperative, Columbia, to accept a position as manager of Paradise Ice Cream Co., Orangeburg, S. C.

Raymon D. Mathews, Dairy, '52, is playing professional baseball with



the Greenville Spinners, Greenville, S. C. Mathews has been playing with the Pittsburgh Steelers since his graduation from Clemson.

ALPHA ZETA ELECTS OFFICERS

At the April 15 meeting of the South Carolina Chapter of Alpha Zeta, national honorary agricultural fraternity, election of officers was held. Ray M. Buck Jr. a rising A.H. senior from Mt. Pleasant, S. C. was elected Chancellor, Elbridge J. Wright, Jr., a rising agronomy senior from Belton, S. C., was elected Censor, Donald B. Anthony, a rising poultry senior from Travelers Rest, S. C., was elected Scribe, Watt E. Smith, II, a rising ag. engineering senior from Rowesville, S. C., was elected Treasurer, and Richard F. Elliott, Jr., a rising A.H. senior from Remini was elected Chronicler.

These officers were installed at the meeting on April 25.

AGRONOMY CLUB NEWS

New members were initiated into the Clemson Chapter of the American Society of Agronomy at a meeting on March 22, 1955. The new members are W. C. Brown, sophomore; L. P. Livingston, freshman; D. W. Player, freshman; D. H. Bryant, junior; R. L. Stephens, freshman; W. L. Corley, sophomore; T. R. Gerald, sophomore; and V. A. Rogers, junior.

AGRONOMY CLASS TRIP

Members of the Agronomy 405 Breeding class, accompanied by Dr. J. W. Jones and Dr. C. M. Jones, made a field trip to the lower part of the state on March 14 and 15. On the trip they visited the Truck Experiment Station, the Regional Vegetable Breeding Lab in Charleston, S. C., and Coker's Pedigreed Seed Co., in Hartsville, S. C. The current breeding work at these locations was observed.

DAIRY CLUB ELECTS OFFICERS

At the last meeting the Dairy Club elected the officers for the coming year. Bennie Wiggins was elected President, Billy Joe Bailes, Vice-president, and Daniel D. Lee, Secretary Treasurer. Dr. J. T. Lazar will continue to serve as Faculty Adviser. The officers were installed immediately after the election.

On April 28, 1955, the Dairy Club held its annual picnic at Boscobel. A large crowd was present consisting of club members, Dairy faculty, Department workers, and families. Everybody enjoyed a delightful evening of entertainment and the picnic lunch.

This semester the Dairy Club has had some very interesting speakers. Dr. Graham, Associate Professor of Dairying, talked on the Development of Cheese and the Blue Cheese Project here at Clemson. Dr. Hurst, Associate Professor of Dairying, talked on the Artificial Insemination Program of Clemson. Mr. Dunkelberg, Associate Professor of Agricultural Engineering, gave a talk on his trip to Chile.

NEW AGRARIAN STAFF ELECTED

Members of the 1955-56 Agrarian Staff have recently been elected by the Fraternity of Alpha Zeta. Alpha Zeta is in charge of the Agrarian and the Student Adviser and Co-editors must be members of the Fraternity.

The new staff is as follows: Student Adviser, Ray M. Buck Jr.; Co-editors, Elbridge J. Wright and Donald B. Anthony; Associate Editor, Richard F. Elliott; Business Manager, Thomas E. Hayden, Jr., Departmental Editor, Bill DuBose; News Editor, Jack Langston; Feature Editor Watt E. Smith; Advertising Managers, Carl D. Lewis, J. W. Wright, and Walter Ramage; Photographer, Bennie S. Wiggins; and Circulation Manager, Earl Little.

NEW AG. BUILDING SOON BE IN USE

The new Agricultural Building Program is nearing completion and, according to Dr. M. D. Farrar, Dean of the School of Agriculture, will be ready for general occupancy around June 1. Lecture classes in summer school will be held in the air conditioned classrooms of the Plant and Animal Science Building. These classrooms will be open to those departments who can schedule classes through the Scheduling Committee.

The building will be ready for a general opening and dedication during Farmer's Week which will be held August 15-19. It is planned to hold a large part of the Farmer's Week programs in these buildings.

AG. MEN WIN DANFORTH RECOGNITION

The winners of three Danforth awards have been announced recently. Richard F. Elliott, a rising animal husbandry senior from Remini, has been named winner of the Danforth Junior Fellowship. This Fellowship consists of a two-week stay in St. Louis as well as two additional weeks at Camp Miniwanca, a leadership training camp in Michigan.

The freshman fellowship was won this year by George E. Steinbridge of Eljay, Georgia. This fellowship consists of the two weeks in Camp Miniwanca. These two awards, both the Junior and Freshman Fellowships have been awarded at Clemson for the past 20 years. These fellowships are awarded to qualified men majoring in poultry, dairying, or animal husbandry.

A new award begun this year, is the Ralston Purina Scholarship. This Scholarship consists of \$500 awarded to a rising senior in either dairy, animal husbandry or poultry who has a good record in both scholarship and activities as well as showing a need. This year the scholarship has been awarded to Morgan I. Fralick a rising dairy senior from Bamberg.

The Men Who Guide Us

B. L. Walpole, Agron. 55

JAMES R. COOK

Professor Cook received his B.S. from Texas A&M in 1939. In 1948 he received his M.S. from Iowa State College.



At the present he is teaching Feeds and Feeding, Feeds and Feeding lab, and Pork Production. He is class adviser for pre-veterinary students at Clemson.

H. P. COOPER

Dr. Cooper graduated from Clemson in 1911 in Agronomy. He continued his work in the field of agronomy, receiving his M.S. degree from



the University of Wisconsin and his Ph.D. from Cornell. He has been an instructor of agronomy at Penn. State College, assistant professor at Massachusetts, and instructor of

field crops and later assistant professor of agronomy at Cornell.

In 1930 he became professor of agronomy at Clemson. From 1936 to 1953 he was Dean of the School of Agriculture and Director of the Experiment Station. At the present time Dr. Cooper teaches mineral nutrition and a seminar course to agronomy seniors.

He has published many scientific papers and has achieved national recognition in the field of plant nutrition.

CAREER OPPORTUNITIES

(continued from page 3)

ministered by the School of Agriculture and the School of Engineering. In addition to the four-year programs, two-year courses of study are offered in Pre-Forestry and Pre-Veterinary Medicine.

Some of the information in this article is based on a booklet, **Careers Ahead**, developed by the Resident Instruction Section, Division of Agriculture, Association of Land-Grant Colleges and Universities in cooperation with the National Project in Agricultural Communications. Within the next few months, the School of Agriculture will distribute copies of the booklet to interested individuals.

BROILER PRODUCTION

(continued on page 6)

ens from getting into the feed and scratching it out. Growers raising large numbers of broilers may find automatic feeders an economical investment since they reduce labor in feeding.

Feeders and waterers should be arranged in a chicken house so all the chickens can get to the feed and water as easily as possible. When chickens are young, chick boxes with the sides cut down are used as feeders. Fruit jars with round troughs around the mouth of the jar are used as waterers. As the chickens get older, larger feeders and waterers should be used. The older the chickens get, the higher the feeders

and waterers should be raised so that the chickens will have to reach to get the feed and water. This will keep them from wasting feed and also keep from scratching litter into the feeders and water troughs.

A good thing to remember is to never make a sudden change in the chickens environment. A chicken can't think so you have to do his thinking for him. An example of this is don't take all the jar drinkers out at one time and put automatic drinkers in their place because the chickens won't know how to drink out of the new waterers. Growers just starting into broiler raising have been known to have chicks die of thirst and hunger because they made abrupt changes.

Anyone wishing to help defray mailing and handling costs of "THE AGRARIAN" please fill in the following and send to:

"THE AGRARIAN"
c/o Co-Editor
Box 3296
College Station
Clemson, S. C.

Name : _____

Address: _____

\$ _____

How IH engineers designed a more efficient, safer, completely

INDEPENDENT POWER TAKE-OFF!

The most flexible pto operation ever developed for a farm tractor is available in new McCormick® Farmall® 300 and 400 tractors, and International® W 400.

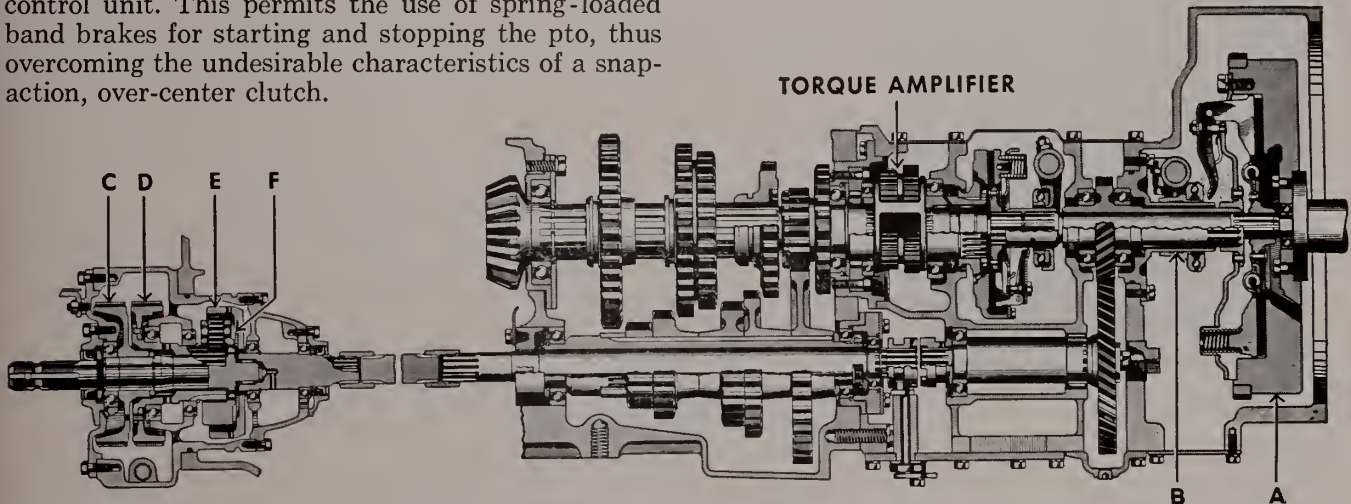
Velvet-smooth control of the *completely* independent pto supplies convenience and safety features exclusive with IH design. For example:

- Pto can be started smoothly with engine at full throttle.
- Pto can be braked to a smooth, fast stop.
- Pto is securely locked, preventing machine "creeping" when control lever is in disengaged position.
- Pto and tumbler splines can be lined up by hand, with engine stopped and pto control lever "centered."
- With Torque Amplifier drive, pto speed can be maintained uniformly while tractor speed is changed on the go to match the widest range of crop and field conditions.

To achieve these pto safety and convenience features, IH engineers developed a planetary-gear drive and control unit. This permits the use of spring-loaded band brakes for starting and stopping the pto, thus overcoming the undesirable characteristics of a snap-action, over-center clutch.



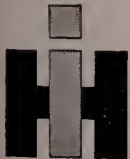
Farmall *completely* independent pto and Torque Amplifier drive team up to eliminate the investment and upkeep costs of mounted engine drives on machines such as this pto-driven big-capacity McCormick No. 55 baler, pulled by a Farmall 400.



Farmall pto is *completely* independent. The pto drive is direct from the engine flywheel (A) and clutch back plate, through hollow shaft (B) to first gear reduction, then to planetary gear reduction and control unit. When the pto shaft

is engaged, the brake band (C) on the shaft drum is released, and the brake band (D) on the sun gear drum is applied. This causes the ring gear (E) to turn the planet pinions (F) around the sun gear, driving the pto shaft.

IH engineering teamwork produced the new, *completely* independent power take-off. IH research, engineering, and manufacturing men are constantly pooling time and talent to provide equipment of improved performance, making the work easier, thereby reducing operator fatigue while boosting production.



INTERNATIONAL HARVESTER

International Harvester products pay for themselves in use—McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Crawler Tractors and Power Units . . . Refrigerators and Freezers—General Office, Chicago 1, Illinois.

The Hardwood Problem in South Carolina

James C. Stevenson Pre-Forestry '57

Throughout South Carolina there is an increasing problem of hardwood control in mixed timber stands. Before this area was settled the dominant cover was hardwood and the tendency to return to this type of forest cover is natural. The extensive pine stands developed through destruction of the original cover by clearing and fire after the settlers moved in. Measures for hardwood control are a reversal of natural tendencies and are difficult and also expensive. However, since the pine has proven to be the best for the purpose of timber production, and

the probability of pine taking over the area.

Clear cutting of pine stands seems to be one of the chief reasons for the trend back to hardwood cover. Fire protection also aids oak and other hardwoods to increase in forest lands. Before our forests were placed under fire protection fire would run through the understory of pine forests destroying the hardwood undergrowth. Fire also killed the young pine seedlings so it is evident that uncontrolled fire is not the best means of hardwood control. Controlled fire, however, sometimes aids, especially when the area is burned just prior to a good seed year. Conditions must be just right for the fire to kill the hardwoods, and adequate control of the fire is expensive, since the only time when the fire will get hot enough to kill the hardwoods is when the vegetation is very dry and control most difficult.

Overthinning of pine stands lets the shorter hardwood gradually catch up with the pine. As the stand is opened, the hardwoods grow rapidly because of their extensive root systems built up during the period of suppression. The crowns of the remaining pine gradually get thicker, however, and slow the hardwoods again until the next thinning. Because of the dense undergrowth, pine seedlings cannot grow to replace the old pine, so as the mature pine is taken out, the hardwood gradually takes over. When that happens the hardwood must be destroyed completely and pine regeneration started again. If the stand is thinned correctly and kept well stocked, the hardwood is kept down, but some treatment may still be necessary.

The easiest method of killing hardwoods is by the use of heavy machinery such as bulldozers. This method is effective where the hardwood cover is very thick and there are no young pines. Bulldozing is usually expensive per acre unless carried out on large areas, but is very expensive since the ground is prepared to receive the pine seeds while the cover is removed. If a

good seed year is successfully predicted and the removal is made to it, very good results can be obtained provided a sufficient number of pine seed trees are on the area. If there is no seed source, seedlings can be planted with good results. This type clearing operation carried out by the Urania Lumber Company, Urania, Louisiana cost that company approximately seven dollars per acre.

Another control method, which is usually cheaper, is the use of chemicals applied in frills or sprayed. One recommended chemical is Ammate, another is 2,4,5-T. Ammate is mixed with water or applied in the crystal form and 2,4,5-T may be mixed with oil or water. These chemicals may be applied on frills cut around the trunk of the tree through the bark or in notches cut at the base of the trunk. Gums and oaks are best controlled by frilling, and hickories and beech by spraying the base of the trunk. Trees over twelve inches in diameter may be girdled without poisoning since they do not tend to sprout. Poisoning costs about four dollars per acre. However when the chemicals are sprayed on the cost is higher. One disadvantage of chemical treatment is that the ground is not prepared to receive the pine seed. Therefore it is often necessary to plant seedling unless there are already seedlings growing.

At the present time experiments are being carried out at several experiment stations, including that located at Clemson College, to determine the success of chemical control, and also the cost of it and the returns to be expected in the production of better forests. Since increasing profits from forest land is a primary purpose of hardwood control, the cash returns are being given much attention.

A pamphlet has already been issued by the Clemson College Extension Service entitled **Controlling Southern Hardwoods** (circular 385.) In this pamphlet may be found methods recommended for use on different type forest areas for best results.



Hardwoods can ruin a good pine stand.

experiments have shown that continued growth of pine is not detrimental to the soil, control of hardwood trees to increase pine stands is usually justified. One means of control would be increased cutting of hardwoods for crossties, rough lumber, and timbers, or through the development of such uses as pulp, sugar, molasses, and high protein feed manufacture. These uses are presently limited and there is very little hope that use can be found for all the hardwood now available. It now appears that means of control should be used which simply destroy the hardwood and thereby increase

VAN LOTT, Inc.

430 Meeting St.

West Columbia, S. C.

Distributors of
IRRIGATION EQUIPMENT

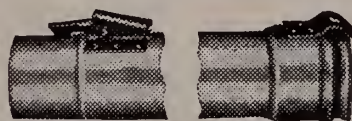
WEBSTER PIPE

JAEGER PUMPS

RAIN BIRD SPRINKLERS

BERKELEY PUMPS

G. M. DIESELS



WEBSTER PIPE CONNECTIONS

Big Oak Ranch

BRAHMA — HEREFORD — ANGUS
CROSSES

and

Registered BRAHMAS and HEREFORDS

Mt. Pleasant, S. C.

Ray M. Buck, Owner

Farm Pond Site Selection

Heyward Ramsey, Ag. Eng. '57

Realizing that a fishpond is for recreation and pleasure and not as a source of anxiety and worry, a person may save himself many headaches with the proper selection of a fishpond site. The perfect fishpond site does not exist, yet the best site available can be made better and a good site may be improved upon. The proper selection of the farm fishpond site will decide whether the future management of the fishpond will be accomplished with difficulty or with ease.

The permanent resource of the fishpond is the water that is impounded. A rapid exchange of water in a fishpond is not favorable for fish culture because in the natural state water is seldom in its most productive form. It is therefore important to select a site in which excessive amounts of water both floodwater from heavy rain and the regular flow can be avoided or can be managed. A pond should not be built

applied anywhere: enough water to keep the pond from drying up or to maintain the right level all the time without any water flowing out.

When there is a spring or other source of live-water capable of supplying the pond, a large drainage area is not needed. Three to five acres for a one acre pond will be sufficient.

Without a live water supply, a pond builder should avoid sites which have watersheds more than twenty-five times the surface acreage of the pond. A ratio of ten to one, or even less, is much more desirable. Some good fishponds depend on rain alone with a watershed that is only twice as large as the pond. It takes a good heavy soil to allow this.

It is much easier to select a fishpond site today than it was in former years, thanks to the new types of earthmoving machinery. These machines make it possible to have ponds in places that it was once

water areas that are undesirable.

The desired depth for the best fishpond lies between three and twelve feet. Water that is three feet deep will grow practically as much food as deeper water. No shallow water areas less than eighteen inches deep are needed. They grow too many weeds, protect the small and intermediate fish too well, and don't produce enough fish food. In South Carolina a depth of six feet is ample enough for the deepest part of a pond. Greater depths are not objectionable beyond the added cost of higher dams.

In the selection of a pond site, not only the above ground features of the pond must be taken into consideration, but the soil beneath the pond must be considered. The soil must be able to hold water, or it must be capable of being made to do so during construction of the pond. This is a problem that should be referred to a soil and water conservation technician unless the pond builder has had sufficient experience in this type of problem.

Theoretically, lands with good clay subsoils will hold water. Though each have their exceptions, deep sands or rocky sites will allow excessive seepage. Preventive measures should be taken during the construction of the pond and not afterward. Two preventive methods are recommended. There are: (1) the building of a seepage core and (2) placing a layer of clay materials all over the pond basin.

To build a seepage core, a trench about four feet wide should be dug along the centerline of the dam site down to soil that is reasonably impervious. The trench should then be filled with the best clay material that is available. The core of clay should be built up several feet into the dam itself.

The second method is a relatively new one. It can be used where there is a good source of clay available nearby and the clay seepage core method is impractical. The size of the pond basin and the cost of plac-

(continued on page 20)



(Photo courtesy Extension Service)

Farm ponds can be used for recreation, conservation and food production.

upon any site unless its condition comes within the limits of practical management.

The fishpond that is to be managed efficiently must be of a size—when related to the rains and the ordinary flow from its watershed — to keep the management safe, dependable and commercial. Or the excess water must be diverted around the pond. A few principals can be ap-

plied anywhere: enough water to keep the pond from drying up or to maintain the right level all the time without any water flowing out. When there is a spring or other source of live-water capable of supplying the pond, a large drainage area is not needed. Three to five acres for a one acre pond will be sufficient. Without a live water supply, a pond builder should avoid sites which have watersheds more than twenty-five times the surface acreage of the pond. A ratio of ten to one, or even less, is much more desirable. Some good fishponds depend on rain alone with a watershed that is only twice as large as the pond. It takes a good heavy soil to allow this. It is much easier to select a fishpond site today than it was in former years, thanks to the new types of earthmoving machinery. These machines make it possible to have ponds in places that it was once

Modern youth, they say, is impatient, demanding, unwilling to do drudgery. Case takes those young ideas as an inspiration to build Diesel Tractors better than ever were built before.

Impatient with two-stage starting? The Case Diesels start directly on diesel fuel at the touch of a button that calls forth the energy of a 12-volt electrical system. For the worst of winter cold, a capsuled shot of ether priming fluid provides prompt response.

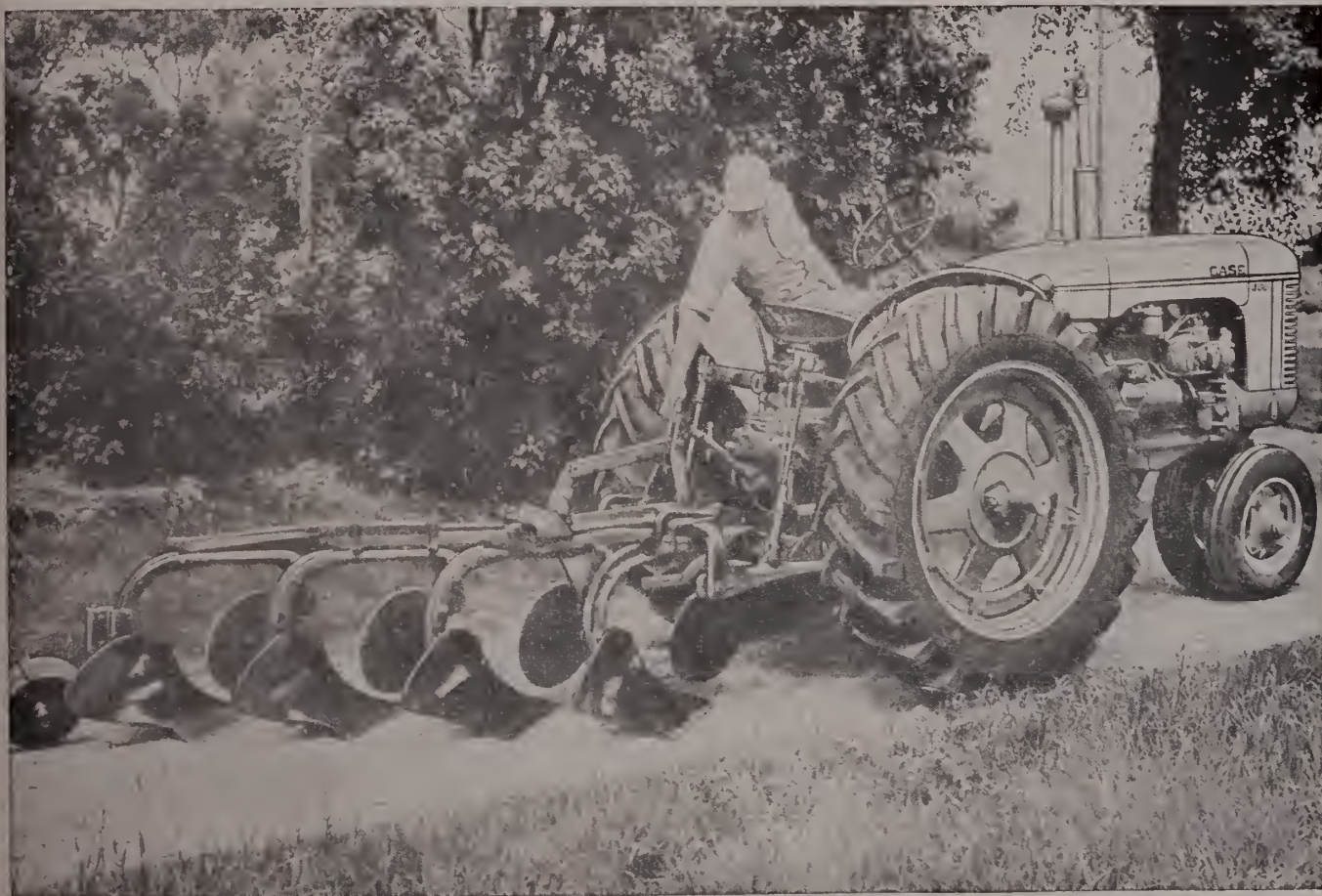
Does youth demand smooth, quiet power and clean burning? Case "Powrcel" controlled combustion gives smooth operation all the way from full load to prolonged idling . . . lugging power for hard pulls at reduced speed . . . remarkable freedom from smoke at all loads and speeds.

Dislike irksome effort? With Power Steering, a gentle hand on the steering wheel turns front wheels short—even when standing in soft soil. Duo Valve operation of Constant Hydraulic Control works two rams—raises or angles big implements at a touch of one or both levers.

These are ways that young ideas avoid waste of time, strength and fuel . . . make farm work produce more food and better income. Case has been building young ideas into farm machines for more than a hundred years.



YOUNG Ideas Inspire Diesel Design



All-new, 4-plow Case "400" Series Tractors have new engines for all four fuels—diesel, gasoline, LP Gas, and distillate. By every standard the "400" is known as the finest tractor in the 50 H.P. class. The "400" has all the features you want for your farm of tomorrow . . . plus famous Case Eagle Hitch—the only 3-point hook-up available for 4-bottom plows and other rear-mounted implements built for 4-plow power. J. I. Case Co., Racine, Wis.



CASE

Serving Farmers Since 1842

"The Home of Good Eats"

SEIGLER'S STEAK HOUSE

Walhalla, South Carolina



CLEMSON MEN ALWAYS WELCOME



Clemson
AAA *House*

In the foothills of the beautiful Blue Ridge Mountains, you'll find the Clemson House located in a unique setting — right on the campus of Clemson College. Here you will find all of the services of a great metropolitan hotel yet you will be far away from the noise of a large city. And you'll enjoy the beautifully landscaped grounds and the flower beds. The splendid accommodations and the excellent cuisine offered at the Clemson House are combined with warm friendly hospitality and fine service. The Clemson House is a gem among fine hotels, and the rates are almost unbelievably low. All rooms are air conditioned. Four dining rooms and the Tiger Lounge and Coffee Shop. There is swimming, fishing and golf nearby

FRED L. ZINK, JR., Manager

On East Edge of Clemson, S. C., on U.S. 78, 123 and State 28.

SWITZERLAND

(continued from page 9)

their dependents they make up one fourth of the population. Moreover, if we consider the proportion of urban to rural population, the great decentralization of urban elements, the absence of big towns and industrial regions with purely urban settlements, we shall not go far wrong in inferring a strong attachment to the land even on the part of such groups as are not actively engaged in agriculture. A comparison with other countries brings to light the interesting fact that in SWITZERLAND, after Belgium and England, the highest employment figures for trade and industry, live in communities of 10,000 inhabitants or less, that is, in rural settlements.

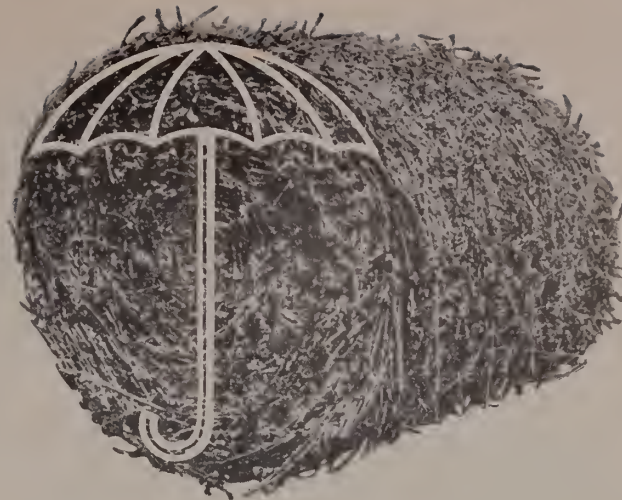
Lets go just a little deeper into the agricultural situation and examine the farmer, or peasant as he is referred to there, who occupies one of the highest positions of respect. Large estates are entirely unknown in Switzerland. The holdings are medium-sized to small, mostly small. By actual census definition the average farm consists of only 7½ acres but for all practical purposes an average of 12½ acres is accepted by agricultural leaders of the country. It is hard for us to comprehend that on such small acreages that the production is very high, especially when we consider the fact that the soil is reasonably poor. Too, with very little commercial fertilizer used in SWITZERLAND, the averages of production are extremely high. In the place of commercial fertilizers the Swiss practice a very thorough and capable means of fertilization, and that is the use of farm manures. As all other materials in the country, not a drop of liquid manure or compost is wasted. By the conservation of this by-product the yields are upped tremendously.

The following is a breakdown of the various uses of the Swiss soil:

	Acres
Unproductive area	2,300, 007
Alpine grazings (mountain pastures)	2,519,229
Woodland	2,494,678
Agricultural land (arable soil)	2,885,884

From this you can see that the uses of the soil is very limited and depends to a great extent upon topo-

Round Bales have a built-in "UMBRELLA"



The curved top of a round bale sheds showers like an umbrella. Here is the answer to one of the biggest crop losses in farming — wet and weathered hay.

Due to the extreme weather hazards at hay harvest time, every farmer should have his own baler. The low-cost ROTO-BALER makes this possible and practical. If only 50 tons of valuable hay are saved from weather spoilage in one season, the cost is more than repaid.

Round bales cannot work magic and turn poorly cured hay into choice No. 1 grade. But if hay is sweet and cured properly, round baling preserves the carotene and protein by rolling in the leaves — dry and safe.

Home-baling pays. It can be timed perfectly with a home-owned ROTO-BALER. The reward will come in greater productiveness and well-being of the herd.

*Only the ROTO-BALER has it!
"Roll-up" compression seals leaves
in and shields them from weather.
When hay is round-baled...it's safe!*



*Home ownership! That's the final
great advantage of a ROTO-BALER,
priced for the individual farm. No
other haying system makes possible
such quick timing when hay and
weather give the sign to bale fast.*

ROTO-BALER is an Allis-Chalmers trademark.



ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

ROTO-BALER

\$1165 f.o.b. factory
including Power Take-Off

SWITZERLAND

(continued from page 18)

graphical characteristics as to the extent it is used. In the first classification you find the extreme mountainous area, which is unknown to any region in the U. S., and as for as agriculture is concerned is completely useless. The Alpine grazings are the areas which you could compare to our Smoky Mountains and are utilized only six months out of the year. Here, the cattle are kept during the summer for the purpose of cheese-making or butter manufacture. The woodlands are high on the list of important economic factors because of the limited amount which they possess. All timber is harvested according to strict conservation regulations, which are very powerful if abused. The arable land area is just a little over one-fourth of the total and because of its importance is put to its best uses at all times. Never is there a foot wasted, never is it abused, nor very little of it is allowed to lay bare.

The cattle in SWITZERLAND are vitally important to the farmer because a great deal of his income is obtained from them along with a sizeable amount of satisfaction. Aside from milk, the cattle are vitally important for meat and in some areas for beast of burden. All of the Swiss breeds are primarily bred as triple-purpose animals. As a citation to the importance of cattle, in 1947 livestock accounted for 66.1 percent of the gross farm return, with cattle returning the largest amount.

The crops in the general agricultural area are not too different from those we plant here in South Carolina. With the exception of corn and oats, the crops are about the same, with more emphasis being placed on wheat and potatoes. The weather is quite favorable for generalized and diversified farming with an average precipitation of about 5 inches per year, however, the rain is not as seasonable as ours and is distributed over the entire twelve months.

A factor which I think is very important in SWITZERLAND as far as the farmer and his well-being is concerned is the co-operative movement. There has been a steady expansion of co-operative and associational thinking on the part of the Swiss farmers. They seem to be of

one mind when it comes to the Swiss farmers. They seem to be of one mind when it comes to the desire for education, expert knowledge and progress on a businesslike and commercial basis. As testimony to this vast movement consider the fact that there are in SWITZERLAND at present 17,369 agricultural associations of varying sizes. Examples of some of the associations or co-operatives are the ones for poultry farmers, bee-keeping, rabbit-breeding and goat-breeding.

With hard work, which keeps the farmer busy from five in the morning until eight at night for 360 days of the year, the Swiss farmer has taken meager resources and equipment and produced one of the highest levels of living known in the world today. He has applied methods and his intelligence along with his brawn to give to the world an example that laziness is a word that should never have been concocted for use of the human race. As a summation of the country of Switzerland and to its citizens, particularly the Swiss Farmers, let me give you in a nutshell what SWITZERLAND is really like. The ordinary Swiss watch, for which they are famous, is made of raw materials and resources imported from other countries. The price of the watch, that is what we would pay for it in a store, includes 3 percent which was paid for the raw materials. The remaining 97 percent accounts for SWISS SKILL, SWISS LABOR, and SWISS INTELLIGENCE. Ninety-seven percent skill, labor, and intelligence to me is about as good an example of SWITZERLAND as I know of . . . That, is accomplishment to the highest degree.

FARM POND SITE

(continued from page 16)

ing the clay are two of the major factors to consider before using this method.

If given a choice between two sites, one covered with trees and the other site clear, by all means take the clear site. The expense of cutting the trees and clearing the site are saved. If, however, the better site of the two is the forested area, add the cost of clearing the site before you decide to build. Low cut stumps can be left behind if necessary, but the pond will be better off if the trees are pulled out and no stumps are left at all.

INSECT CONTROL

(continued from page 8)

sprays may be applied during most of the working hours, since they can be successfully applied in winds up to 12 m.p.h. Spray materials should not be applied when the foliage is so wet that water is dripping from the leaves.

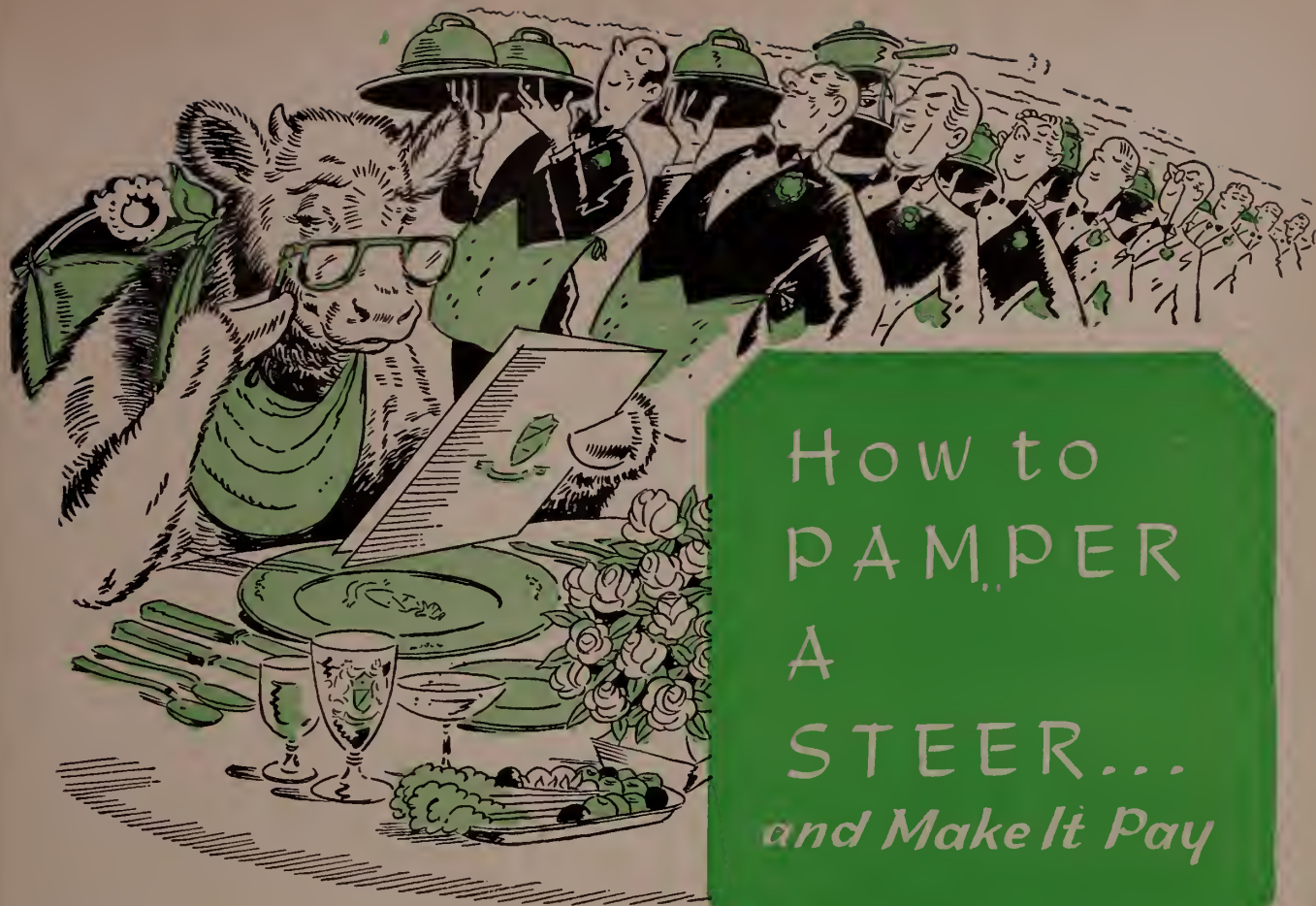
The number of nozzles per row will depend on the stage of plant development. For early-season control, one nozzle per row will give adequate control; whereas, in midseason, three or more nozzles will be necessary, depending on the size of the plants. When three nozzles are used, one is mounted directly above the plants, and one on each side of the plants. If additional nozzles are required to give coverage, they are mounted between the rows.

One of the chief problems in late-season application of insecticides is the mechanical damage to the cotton by ground machines. Some of this damage can be eliminated by proper shielding of the tractor wheels. Satisfactory shields may be made from an old discarded steel drum. The drum is cut in half and a section used to shield each rear wheel, the method of attaching depending on the make of the tractor. Plans for attaching to the more common makes of tractors may be secured from your local county agent.

When a new agricultural chemical comes on the market, you can usually figure that it has cost some private company well over a million dollars worth of research to develop.

In an average year, the chemical industry spends at least nine million dollars on research to find new or improved materials for use by farmers.

The research expenditures are motivated, of course, by the desire to make a profit. American business derives its great drive from this incentive. But profit is geared to output, and output depends on what the public will buy. In short, as work is done for profit, the chemical industry is necessarily obliged to work for the public as well. With this in mind, you can readily see that the insecticide industry is not working for profit alone but also for the advancement of American agriculture. Poison regularly and remember when you do, that you are insuring your UNDERGROUND INVESTMENT with ABOVEGROUND PROTECTION.



How to PAMPER A STEER... *and Make It Pay*

MAYBE it's true that Buster here doesn't know *table d'hôte* from a *la carte*, but don't let that fool you. He really knows his "vittles," as anyone who has tossed a shank over a pasture fence can tell you.

Fact is, in his own four-footed world Buster ranks as quite the *gourmet*, and he's been known to get downright fussy at times. That's why those who know him best—cattlemen, that is—have come up with some pretty tasty recipes to satisfy his boyish appetite—to help him grow into a stout, healthy young fellow that will make a good impression on "graduation day," when Buster is

shrewdly judged in terms of steak.

And because feeding Buster has become such a science, often special machinery is required—like the new John Deere Grassland Drill, which is making such a hit with livestock growers. You see, the John Deere Grassland Drill makes it possible to establish and improve range and grassland and keep Buster supplied with the wholesome, nutritious food he likes and needs.

Buster, of course, generously pays back such treatment in more pounds of better beef—all because he doesn't have to take the "potluck" fare of poor pasture.

JOHN DEERE • Moline, Illinois



Quality Farm Equipment Since 1837

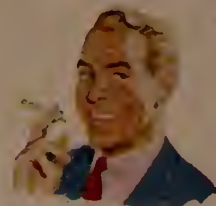


Enjoy both sides
of smoking pleasure!



Feel that mildness

Taste that flavor—



that's a Cavalier!

ENJOY an extra measure of both sides of smoking pleasure — by switching to king-size Cavaliers. Try them! Find out for yourself that Cavaliers give you complete smoking enjoyment. What a pleasure smoking can be when the smoke *feels* so mild... *tastes* so good! No wonder Cavaliers are winning friends so fast!

Yes, join the thousands who are enjoying the extra mildness and superb flavor of king-size Cavaliers. Get some today!



CAVALIERS ARE KING-SIZE
yet priced no higher
than leading regular-size brands.



Ask for the
Cavalier "100"
metal humidor.
Keeps cigarettes
fresh
and flavorful.

Try king-size Cavaliers! *Feel* that Cavalier mildness, so light, smooth and easy! See if you don't agree with thou-

sands of smokers everywhere who compared king-size Cavaliers with the cigarettes they had been smoking. Yes...

See why, among thousands of smokers interviewed...

**8 OUT OF 10 SAID
CAVALIERS ARE Milder!**

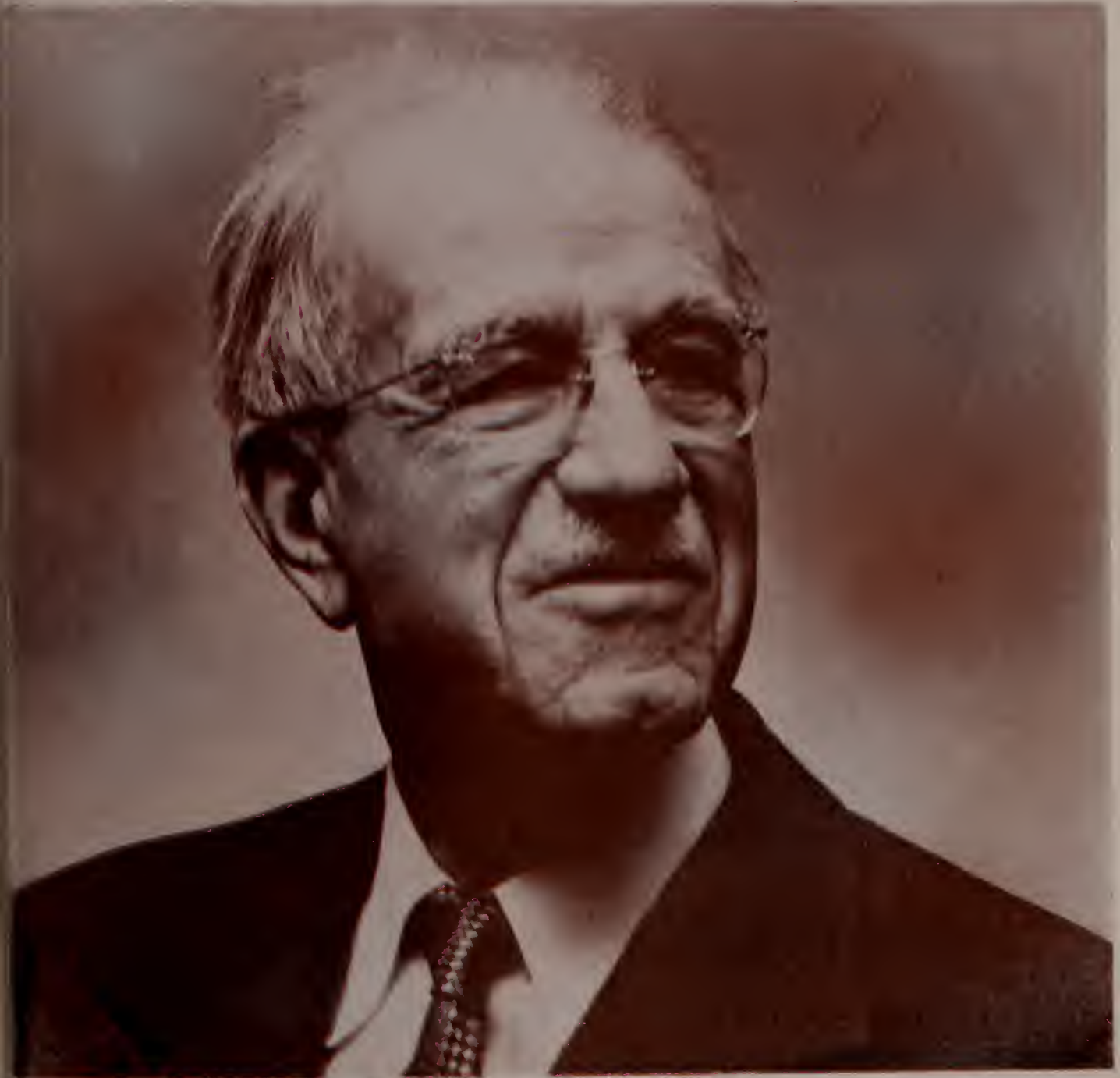
The Agriarian

OFFICIAL STUDENT PUBLICATION

CLEMSON, S. C.

THE CLEMSON A & M COLLEGE

NOVEMBER 1955



VOLUME XV

NUMBER 1

BULK RATE — U. S. POSTAGE PAID
PERMIT NO. 4 — CLEMSON, S. C.



ENGINEERING IN ACTION

makes the difference in earning power

Until recently a farm tractor at work was simply a combination of weight and power in motion — with pulling capacity largely dependent upon the amount of weight carried on the drive wheels.

Today, the work capacity of Allis-Chalmers tractors is measured by a new concept . . . *engineering in action!*

For example, the Allis-Chalmers WD-45 Tractor does not depend upon its own weight alone for adequate traction to utilize the full power of its dynamic engine. By means of the exclusive hydraulic Traction Booster, it *automatically* transfers to the drive wheels as much of the implement's weight as needed, to assure ground-gripping

traction and reduce power-wasting slippage to a minimum.

The Allis-Chalmers Traction Booster system of automatic weight transfer eliminates the need for costly, useless weight in the tractor. Implement weight becomes working weight applied and removed as needed. The action is as automatic as that of an engine's governor.

More performance with less weight . . . at lower cost to the purchaser . . . that's Allis-Chalmers engineering in action.

Today, it makes an important difference in the return a farmer can expect from his tractor investment.

FARM EQUIPMENT DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS



THE AGRARIAN

Volume XV The Clemson Agricultural College Number 1

Donald B. Anthony
Co-Editor

Richard F. Elliott
Associate Editor

Elbridge J. Wright
Co-Editor

James W. Wright
Advertising Manager

Thomas E. Hayden
Business Manager

Earl Little
Circulation Manager

Watt E. Smith Feature Editor Jack C. Langston News Editor
Bill Dubose Dept. Editor

Departmental Writers—

Fred McLaughlin, Jr., Watt E. Smith II, Louis Jordan, David A. Bruckner, Jack C. Langston, and Richard F. Elliott.

Advertising Staff—

James W. Wright, Carol E. Brown.

Circulation Staff—

Earl Little and Dick Fitchett.

Advisory Staff—

B. E. Goodale and T. L. Senn.

THE COVER: It is fitting that our cover should carry the picture of Mr. Wm. H. Danforth, founder of Ralston Purina Company and chairman of the board and president of the Danforth Foundation since these two organizations have jointly furnished Danforth fellowships for some thirty Clemson men. (See page 3)

IN THIS ISSUE

I Dare You	Page 3
Agricultural Engineering—A Challenging Career	Page 4
The New Meats Laboratory	Page 6
Farm Mechanics Stressed by S. C. Ag. Teachers	Page 7
Between the Furrows	Page 8
Entomology As a Career	Page 10
Benefits of South Carolina Forests	Page 12
The Men Who Guide Us	Page 14

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education, and sponsored by the South Carolina chapter of Alpha Zeta. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

AGRARIAN

PHILOSOPHY

R. F. Elliott, Associate Editor

The field of agriculture, more than any other field of endeavor, depends on nature. There are two quite obvious "philosophies" which the agriculturist can cultivate toward nature during his life of agricultural endeavor.

The first and by far the most popular is the "me" philosophy. The cultivator of this philosophy is never completely happy. He is always worried about the weather, both present and future. The world revolves around him and fate is against him when nature doesn't exactly suit his fancy. There is no consideration for the man on the other side of the fence, who may be reaping benefits from the same conditions of nature. He never learns to adjust himself to the changes of nature, but always thinks nature should adjust to him.

And then there is the "God" philosophy. The cultivator of this philosophy possesses a complete confidence in the Supreme Power and a personal ability to adjust. He relaxes mentally in his belief that God knows what is best much as a man relaxes physically in his favorite chair. If he needs rain, he talks it over with God and surrenders his will to God's as Christ did in Gethsemane. Whether it rains or not he is confident that God's will was done—and he's happy in that knowledge.

Which is your philosophy? And which sounds more conducive to good health and happiness?

Anyone wishing to help defray mailing and handling costs of "THE AGRARIAN" please fill in the following and send to:

"THE AGRARIAN"
c/o Co-Editor
Box 2476
College Station
Clemson, S. C.

Name: _____

Address: _____

\$ _____

**NEWMAN D. BUCK
FARMS**



**Fruits & Vegetables
Year Round**



**MOUNT PLEASANT
South Carolina**

**LEE'S
Amoco Service Station**



Most Modern Station in Clemson

CLEAN REST ROOMS

**Honoring Courtesy Cards of
All Major Oil Companies Soon**



Telephone 6696

**COBLE DAIRY
Cooperative, Inc.**



**DIAL CA 5-5491 FOR
HOME DELIVERY**



FARMER OWNED

2802 N. MAIN ST. ANDERSON, S. C.

HEARD HERE 'N THERE

He: "Give me a kiss like a good girl."

She: "Wouldn't you like the other kind?"

The captain realized that there was no hopes for the sinking boat, and said, "Is there any one among us who can pray?"

A meek man stepped forward: "Yes, sir; I can pray."

"Good," said the captain, "you start praying while the rest of us get lifebelts one. We're one short."

"I don't want any of your lip," said the dentist as he prepared to pull the tooth.

A young mother came to the door of the nursery and saw her husband standing over the baby's crib. Silently she watched him as he stood looking down at the sleeping infant. In his face she read rapture, doubt, admiration, ecstasy, incredulity, wonder. Deeply touched and with her eyes glistening she tip-toed, slipped her arms around him.

"A penny for your thoughts," she said tenderly.

Startled into consciousness, he blurted: "For the life of me I don't see how anybody can make a crib like that for \$3.49."

I Dare You To Read This Now

By Richard F. Elliott, A.H. '56

Bulletin: R. F. Elliott, animal husbandry senior from Pinewood, S. C., and G. E. Stembidge, agricultural sophomore from Elijah, Ga., won the four-week and two-week Danforth Fellowships respectively last spring. Both fellowships include two weeks at the Older Boys Christian Leadership Camp Miniwanca on Lake Michigan in August. The senior fellowship also includes two weeks in St. Louis, Mo.

If you reach your goal in life, then you haven't set it high enough. And if you haven't reached your goal, you haven't tried hard enough. This is William H. Danforth's philosophy of life — a philosophy which he has instilled in the Ralston Purina Company. The result? Purina is now as large as the next five feed companies combined.

Whoever you are—whatever your age—whatever your position in life — examine your goal. Is it high enough? Are you putting forth a maximum effort to reach it? As Jam Handy, twice on the U. S. Olympic swimming team (twenty years apart), and president of the Jam Handy Company, told the Danforth Fellows last August at Camp Miniwanca: "No man is limited, he can do anything he wants to do if, he believes in himself and God!"

My "goal" in writing this article is dual in purpose. First, I want to challenge all freshmen, sophomores, and juniors in the fields of dairying, animal husbandry, and poultry husbandry, to win the experience of a lifetime, and second, I want to share a small part of my experience with our many readers all over the state.

Last spring I was notified that I was eligible to apply for the Danforth Fellowship. It was they said, an expense-paid month of August. Two weeks were to be spent in St. Louis with the Ralston Purina Company and the second two weeks were to be spent at Camp Miniwanca on the shores of Lake Michigan. That was about all I knew and without

too much enthusiasm and a what-can-I-lose-with-expenses paid attitude, I applied. My next news was that I'd won.

Now let me tell you from the bottom of my heart that that was the best month I ever spent. I spent three days examining the largest commercial research farm in the country, I saw one of the largest businesses in our country in action, I visited the Merchants' Exchange in St. Louis, the National Stockyards, and Swift and Co. I saw the Cardinals play. I spent a day with the oldest advertising agency in the country. I toured one of the world's largest zoos, saw an opera, and saw "Cinerama Holiday." I heard talks by some of the top business men in our country. I spent eight hours in Chicago and crossed Lake Michigan on a ferry. I played volleyball, ping pong, and softball, took part in a full scale track meet, and swam in an aquatic meet. I attended classes in Christian leadership led by the best men in that field. I now have a good friend, a top agricultural student, in



G. E. Stembidge, Mr. Danforth, and R. F. Elliott.

forty states, Canada, and Hawaii. The fellowship alone with such a fine group of boys was enough reward for my time.

I challenge you to start growing now, mentally, physically, socially and religiously in order to win the

(continued on page 16)



The Danforth Fellows of '55, representing forty states, Canada and Hawaii.

Agricultural Engineering

A Challenging Career

By Louis Jordan

What is Agricultural Engineering? This question is asked by some one every day. Agricultural Engineering is a comparatively new field of engineering and for that reason few people know exactly what it is.

To begin with, there is a formal definition of engineering that could make the answer to the question easier. Engineering is "the science of utilizing the forces and materials of nature for the benefit of man, and the art of organizing and directing human activities in connection therewith." Still simpler still, if not so exact, think of engineering as the putting of science to work and guiding the work of people. It is planning of a creative, constructive kind.

Once there were only two types of engineering — military and civil, or the engineering of peace and war. Down through the ages, there became a need to divide and sub-divide this great field of science into several groups of more related units. This was a practical expedient—simply grouping together any and all kinds of engineering that happened to be used in a certain industry or by a man in some field of work.

Agricultural Engineering is the application of any and all branches of engineering to the extent that they may be used in farming, in rural living, rural processing of farm products, and such allied activities as malaria control and wild life conservation. It draws chiefly upon mechanical, electrical, structural, civil, and hydraulic engineering.

Agricultural Engineering is a single profession, its parts interwoven and bound together, all applying to a single industry and often to an individual farm.

For this reason agricultural engineering itself is broken down into groups for easier classification by the American Society of Agricultural Engineers.

There are four main groups of agricultural engineers. They are classified not so much on sheer logic as by the specialization on the many members within the organization. Farm power and machinery is one

of the largest branches and needs no explanation as to the objective.

Power is useless without a means to apply it, and a machine is useless without power to operate it. Power and machinery are so closely related that it is practical to group the two together. It is the objective of agricultural engineers in this branch to find more ways to apply power which will help the farmer with his work. This includes all types of farm implements; cultivators, harrows, all types of harvesting machinery and many kinds of processing equipment. Research is continuously developing new methods of farming. This is the job of the agricultural engineer.

Farm structures are long lived, long term investments. For this reason agricultural engineering must advance in the research of better buildings, fences, and many other stationary improvement of the farm. Few phases of engineering calls for such vision and imagination together with diverse technology and keen economic judgement. No other division of agricultural engineering deals with such elusive factors of time and element as the influence of building design and farmstead lay out on the daily care of livestock which the farmer calls chores. Farm structures engineering calls for full knowledge of climate, the heat and moisture production of animals as well as their environment needs; the technology of ventilation, heating and insulation, physical and biological behaviour of crops in storage; familiarity of equipment for water supply, drainage, and electrical service, as well as conveying equipment and "furniture" for everything from pigs to poultry.

For the betterment of farm living, rural electrification plays an important part in the role of an agricultural engineer. It is not so much the job of an electrical engineer to experiment with the flexibility of electricity to the many jobs that it does on a farm. For this reason new uses for electricity are being found to make farming a more pleasant

living. There are many examples of electrical systems which have raised the standards of living for the farmer. Among those are electric brooders for young pigs and poultry; electric blowers for cooling and curing grain and hay; ordinary and ultraviolet lighting to increase egg production and promote healthier flocks; electric fences and many others.

One of the chief problems of a farmer is that of soil erosion. The soil and water control and conservation deals with this matter with great concern. Every year millions of farm dollars are washed away by the ravages of the elements.

The national program of soil erosion that seemed to come so suddenly was born from a generation of patient research and development, based on the principles that govern the flow of water and the relations among water, soils and plants. In drainage and irrigation, the draining and watering of new land is being followed and overshadowed by a new era of improvement and maintenance which may add more to the food resources and farm earnings than did the original installations. Soil and water engineers are a splendid example of the cooperation which prevails between all agricultural engineers and other scientists.

The amount of earnings that one gets out of a profession should not be the chief thought when selecting a life long career. What one gets out of his respective profession depends largely upon what he puts into it.

To say what the financial status of an Agricultural engineer is would be most misleading. Broad observation and experience indicate that agricultural engineers earn about the same or a little more than the same degree of talent and experience commands in most other fields in engineering.

The varied selection of possible fields is another bonus point in favor of all agricultural engineers today. A large portion of agricultural engineers are highly represented among

(continued on page 6)

52 YEARS OF SERVICE
TO SOUTHERN AGRICULTURE



"The South's Foremost
Seed Breeders"

COKER'S PEDIGREED
SEED CO.

HARTSVILLE S. C.



Write for Catalog and Prices

Hours 11:00 a.m. — 12:00 p.m.



DAN'S

For the BEST in
Hamburgers and all
types of Sandwiches



FOWLER TRACTOR CO.

GREENVILLE, S. C.

Phone 2-3721

Farmer Owned — Farmer Operated

Open Formulas

Seeds of Known Origin

Complete Line of Farm Supplies



Greenville FCX Service

224 Pendleton St. Ph. 5-3224

GREENVILLE, S. C.

The New Meats Laboratory

By Fred McLaughlin, Jr., A.H. '56

Many people that eat beef, mutton, and pork never stop to think of the work involved in preparing these meats so they can be cooked to suit our individual taste. The Animal Husbandry student at Clemson College is continually associated with the production of meat animals. The students also are concerned with what happens to the animals after leaving the farm and arriving at the meat packing plants. This creates a need for a knowledge of slaughtering livestock, cutting meats, and storage of meats.

At the new Agriculture Center at Clemson College there is a new meats lab that is as modern as can be found in the South. The facilities are not only just to give the students a knowledge of packing plant operations, but there is a research aspect involved too.

Suppose we take a tour around the meats lab. The most appropriate place to start is the door we walk in through. The first thing we notice is the "knocking chute," which is a large metal chute which cattle are driven into and held until they can be shot or "stunned." On the chute there is a large door that can be opened after the animal has been stunned. The animal rolls out on the floor of the lab where it is "stuck" or "bled." After the animal has been bled properly a new and very modern electric-power hoist is used to move the dead animals to various parts of the lab.

In the basement, just under the slaughtering room, there is a "holding pen" where enough livestock can be stored to keep the students busy two afternoons. This usually requires 4 steers or 6 hogs.

The old method of dehairing hogs with hand scrapers has been replaced with a modern up-to-date dehairing machine. After the hogs have scalded for several minutes in a scalding vat which loosens the hair, they are placed on the dehairing machine. By the action of metal scrapers on a revolving drum, the hair is removed in about two minutes time. This machine really saves much time and hard scraping that

would normally be employed by hand.

As we continue our tour we notice a room with a refrigeration type door. This is a hide and intestine room, where the hides and intestines are stored to be disposed of later. This is done to insure proper sanitation. To insure further sanitation there is a main drainage pipe in the center of the killing floor. This has a suction pump to draw out all refuse and empty it into the main sewer line.

After the animals have been slaughtered and processed properly they are moved to the refrigeration rooms by way of an overhead mono-rail. There are 5 refrigeration rooms, namely; a chilling room, an ageing room, a curing room, a zero degree room, and a 20 below zero room. The zero and the 20 below zero rooms are used for experimental purposes that seek to determine the effects of the length and temperature of storage upon the storage life of various kinds of meats. Freon 12, the most modern refrigerant, is used in the refrigeration units.

The cutting room is a very important part of the lab. This is where the student learns to break the carcasses down into the numerous cuts. This room is equipped with several wooden cutting tables. The overhead mono-rail is extended into this room so the carcasses can be transported to the desired table. There is a set of portable scales that may be used to weigh the various cuts of meat. In doing this a student can learn what per cent a particular cut of meat is in relation to the carcass.

With relations to research there is a smokehouse, used to smoke meats at various temperature and different lengths of smoking time. A hardwood sawdust is used in the smoke generator. This smoking process tends to preserve and glorify the flavor of meat, especially pork.

Also there is a specific gravity testing vat, used to calculate the percent fat in a carcass. It is made up primarily of a large aluminum vat filled with water and a pair of scales. The carcass is weighed in the air and then weighed in water. This

gives two weights so a calculation of specific gravity can be made. Samples of meat are sent to chemists to check the results.

The students have access to a locker room where they may leave their good clothes and use their old clothes while doing their lab work. There are showers that the students may use after completing their afternoon's work.

For visitors that are interested and want to inspect the lab, there is a large observation platform for their convenience. From this glass-closed observation platform, visitors may observe the activities in the slaughtering and cutting rooms.

It is certainly a pleasure to watch the meats lab in operation and see the students going about their various activities. We can rest assured that the students that take a course in "meats" will certainly have the best opportunity to apply himself to absorb a knowledge of the packing end of the animal science field. Whether he chooses to work in a packing plant or some other field in the meat animal business, he will have a much broader and more appreciative outlook when he sets down at the table to eat a juicy T-bone steak, a tangy lamb chop, or a delicious slice of ham.

A CHALLENGING CAREER

(continued from page 4)

those who rise to the positions of executives in these industries. The farm machinery business is one of the most sought after industries. There agricultural engineers are developing new machines as well as improving old ones. Also they are becoming more widely used in the sales department and in field work.

In the building industry, agricultural engineers are developing designs for the efficient use of various materials, and methods for handling them economically. Prefabrication is a budding business and calls for engineers with a wide spread knowledge of farm structures.

Both the electric power industry and the electric equipment manufacturers are consistent employers of agricultural engineers.

(continued on page 15)

Farm Mechanics Stressed By South Carolina Ag Teachers

By David A. Buckner, V.A.E. '58

Farm mechanics, as a part of Vocational Agriculture, is being emphasized in South Carolina at present. Because of the greatly increasing number of farm tractors and other kinds of farm equipment on farms throughout the state, there has been created a need for improving this program. For example, tractors purchased in the past four years almost equal the total number on farms in 1940.

Farm mechanics refers to the phase of vocational agriculture that teaches farm people to: plan, select, construct, operate, maintain, and repair farm buildings, tools and equipment. Its primary objective is to develop in the students, youth and adults, the ability to properly perform the unspecialized mechanical jobs found on the average farms of the local community.

This new farm mechanics program includes: (1) the improvement of teacher skills; (2) proper and efficient utilization of tools, facilities and supplies; (3) allotment of time to teach farm mechanics; (4) getting more adults, young farmers, and high school students to take advantage of farm shop; (5) determining teacher objectives; and (6) working



Practical experience in a high school machine shop.

out a plan of what and when to teach.

Vocational agriculture is an integral part of the entire high school program. It includes the teaching areas of judging and exhibits, home beautification, crop enterprises, supervised farming, F.F.A., farm forestry, conservation of soil and water,

food production and preservation, farm management, livestock enterprises and farm mechanics. Since farm mechanics constitutes only a part of these major teaching areas, effectiveness and efficiency must be practiced and obtained. All of the above areas must be given some instructional time because each and every one is of great importance to the farmer. Vocational agriculture's primary purpose is to train present and prospective farmers in the business of farming.



A high school boy learns woodworking.

How is the effectiveness and efficiency in teaching the mechanical needs of our farm people going to be accomplished? For the past several years, small group workshops have been held with teachers to improve their mechanical skill. The Clemson College Department of Agricultural Education and The State Department of Education have prepared and published co-operatively the "Teachers Guide, Planning and Developing a Farm Mechanics Program in Vocational Agriculture." Group meetings with small groups of vocational agricultural teachers of the state are being held under the

(continued on page 15)



ALPHA ZETA SPONSORS FAIR — INITIATES NEW MEMBERS

The South Carolina Chapter of the National Fraternity of Alpha Zeta is off to a roaring start for the '55-'56 school year. Even back in the summer wheels began rolling towards the biennial agricultural fair to be held on the 26th and 27th of October. This fair, sponsored by Alpha Zeta, promises to be the biggest in the history of Clemson. The South Carolina Maid of Cotton will reign over the entire fair which will be held almost entirely in the new multi-million dollar agricultural center. Every department in the field of agriculture at Clemson will have at least one exhibit. The next AGRARIAN will carry a complete coverage of the fair.

At approximately 7:30 on the night of October 17, eleven new members were formally initiated into the fraternity. Membership is based on

scholarship, character, and leadership ability. The new members are: Benjamin Thomas McDaniel, junior from Pickens; William Perry DuBose, Jr., junior from Darlington; Ned L. Huggins, senior from Johnsville; David F. Borchert, junior from Clemson; Billy Lee Ragsdale, senior from Belton, John F. Wyman, Jr., senior from Estill; John D. Hicks, Jr., senior from Effingham; James L. Smith, Jr., senior from McCormick; Robert F. Burnett, senior from Greenwood; S. A. Harvin, junior from Sumter, and Jack Langston, a senior from Hartsville. Several of the faculty members of Alpha Zeta were on hand for the initiation.

NOTICE

The AGRARIAN needs help! If you are interested in writing, circulation, advertising, or in just **working**, contact R. F. Elliott in room E-205. It is rewarding work and provides invaluable experience.

BLOCK AND BRIDLE CLUB INITIATES NEW MEMBERS

The Clemson Block and Bridle Club, the professional club of the animal husbandry department, had its first meeting during the second week of school. Plans were made for barbecues (a club specialty) for the coming year and committees were appointed. The biggest immediate project of the club is the animal husbandry exhibit for the agricultural fair. The new meat lab (covered elsewhere in this issue), the pride and joy of the department, will be a big feature in the exhibit.

New members were formally initiated at the "Y" cabin on the banks of the Seneca river on the night of October 11. They are W. B. Richey, T. N. Rogers, R. H. Hammond, W. L. McGee, Jr., R. C. Shearod, J. M. Reynolds, A. H. Pitts, G. T. Sandifer, J. R. Able, E. N. Miller, J. D. Wilkins, J. S. Wigington, J. B. Williams, H. A. O'Cain, C. B. Murphy, and D. B. Clark.

VAN LOTT, Inc.

430 Meeting St. West Columbia, S. C.

Distributors of

IRRIGATION EQUIPMENT

WEBSTER PIPE

JAEGER PUMPS

RAIN BIRD SPRINKLERS

BERKELEY PUMPS

G. M. DIESELS



WEBSTER PIPE CONNECTIONS

3 FURROWS

AGSTON



J. N. TENHET, CLASS OF 1918, RECEIVES U.S.D.A. SUPERIOR SERVICE AWARD

A Superior Service Award of the U.S.D.A. was presented recently to Joseph N. Tenhet, entomologist in charge of the federal agency's stored tobacco insects laboratory at Richmond, Va.

Mr. Tenhet was given the award for meritorious creative service in the planning and conducting of research which developed effective methods of controlling insects in stored tobacco. He was also cited for assisting the tobacco industry in the prevention of insect damage to stocks of leaf tobacco and manufactured tobacco products.

Mr. Tenhet has been in charge of the Agriculture Department's stored tobacco insects laboratory since 1942. Prior to that date he had a long association with the tobacco industry, starting his studies at Clarksville,

Va., following his graduation from Clemson in 1918. He spent a year in military service as a second lieutenant in the infantry in 1918-1919.

Mr. Tenhet is well known throughout the tobacco industry. He has appeared several times in the research seminars of the Cigar Manufacturer's Association and has attended many sessions of the Tobacco Association of the U. S.

D. M. McEACHERN, CLASS OF 1920 GETS BOLLWORM POST

D. M. McEachern, who for the last six years has directed the pink bollworm control program for the government in south Texas, has been promoted to assistant project leader for the entire quarantine area. His headquarters are at San Antonio.

Mr. McEachern has spent nearly thirty-five years in helping control one of cotton's deadliest insects.

Shortly after graduating from Clemson, he was sent to east Texas where the pink bollworm was discovered in the early 1920's. Later he worked in the Big Bend country along the Rio Grande, and in Arizona.

HORTICULTURE CLUB WELCOMES NEW MEMBERS

The Horticulture Club has welcomed six new members into its fold this year, they are: Jack Fruit, Robert Dibble, Steve Bishop, Bobby Skelton, Henry Cobb, and William Dunn.

Most of the club's time so far this year has been spent preparing for the Agricultural Fair and for the meeting of the American Society of Horticultural Science to be held in Atlanta, Ga., in February. The club members are in the midst of a contest to determine who presents research papers to this meeting in Atlanta.

Big Oak Ranch

BRAHMA — HEREFORD — ANGUS
CROSSES

and

Registered BRAHMAS and HEREFORDS

Importers and Breeders of Mexican Burros

Mount Pleasant, S. C.

Ray M. Buck, Owner

Entomology As A Career

Jack C. Langston, Ent. '56

Do you know what an entomologist does? Do you know what his science is all about? Has it ever occurred to you that entomology is one of the most interesting and important of all the biological sciences? Chances are you have never thought about it.

Entomology is the science that deals with insects, which are so common that we hardly consider them important. Yet, they affect man's welfare and his pocketbook in many ways. Our food is spoiled, homes and furnishing are damaged, and diseases are transmitted by insects. Our field crops, fruits, vegetables, livestock, and all other produce from our farms suffer great damage from insect depredations. However, man also is benefited in many ways by these tiny members of the animal kingdom. Many of them are parasites or predators on the types of insects which are pests. Some insects are essential to plant life because they make pollination

possible. They provide food for birds, fish and other wildlife, and help us in many other ways.

Entomology's growth following the discovery of the powerful new organic insecticides, and improved methods of their application, has created a great demand for trained men in the field. There are many career opportunities for a college graduate in entomology today.

The research entomologist is one who finds out new things about insects. If he is working with injurious insects, he studies their life histories, habits and structure, and carries out experiments in the laboratory and in the field in order to determine the best and most practical methods of control. If the entomologist is studying beneficial insects, he may be interested in the development, by breeding and selection, of honeybees which will produce more honey; or in the studying of insect pollinators of legumes and fruits in

order to find the conditions which will increase their numbers; or in determining the parasites of injurious insects and finding out means of increasing their usefulness.

There is a demand at present for more research on the control of insects which attack field crops, vegetables, fruits, greenhouse crops, forests, stored products, and livestock; on the insect carriers of animal and plant diseases; on insects attacking buildings; on insect pollinators of legumes; on insecticides; and in the basic phases of entomology such as taxonomy, morphology, ecology, and physiology.

An extension entomologist may be employed by either the state or federal government. His principal duty is to educate the public in the best methods of insect control. He does this by holding meetings in various parts of the state in which he works and demonstrates the latest control methods, by writing bulletins and newspaper articles, and by giving talks on the radio and television. An extension entomologist has a most perplexing job at times in that he has to work with people, selling them on the latest methods of insect control and getting them to co-operate on certain problems.


Several hundred entomologists are employed in the enforcement of laws prohibiting the transportation of plants or animals and their products which are infested with certain insects from one state to another, or from foreign countries into the U. S.

Every manufacturer of insecticides employs entomologists who serve as public relations men. They contact and furnish information to insecticide dealers, research and extension entomologists, county agents, orchardists, and others about the merits and uses of the insecticides which their company manufactures. There are opportunities in the fields of commercial pest extermination and teaching. Other fields of entomology besides those listed above are: beekeeping, museum work, public health work, insect illustration, in-

(continued on page 14)

One of the best in the South . . . ultra-modern . . . says 



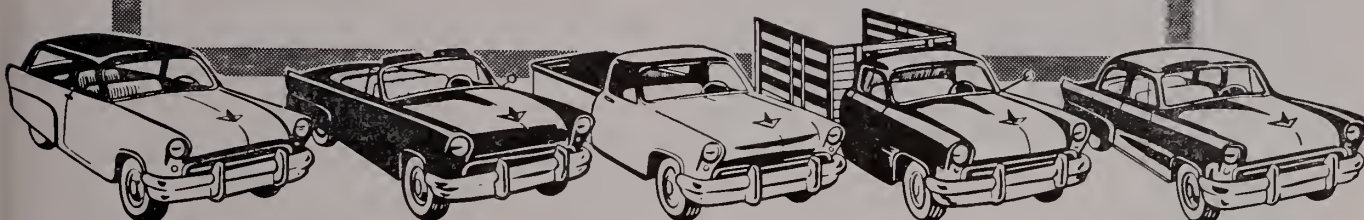
 **Clemson House**

In the foothills of the beautiful Blue Ridge Mountains, you'll find the Clemson House located in a unique setting — right on the campus of Clemson College. Here you will find all of the services of a great metropolitan hotel yet you will be far away from the noise of a large city. And you'll enjoy the beautifully landscaped grounds and the flower beds. The splendid accommodations and the excellent cuisine offered at the Clemson House are combined with warm friendly hospitality and fine service. The Clemson House is a gem among fine hotels, and the rates are almost unbelievably low. All rooms are air conditioned. Four dining rooms and the Tiger Lounge and Coffee Shop. There is swimming, fishing and golf nearby


FRED L. ZINK, JR., Manager

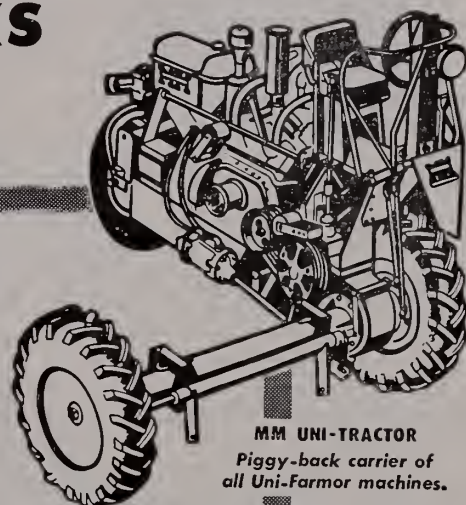
On East Edge of Clemson, S. C., on U.S. 78, 123 and State 28.

**IF ONE ENGINE
AND FRAME
GAVE YOU 5 CARS...**

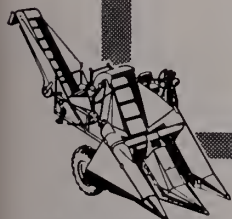


**YOU'D KNOW HOW FOLKS
WHO UNI-FARM PROFIT**

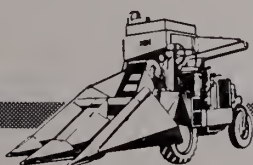
**ONE  UNI-FARMOR
MAKES 5
HARVEST MACHINES!**



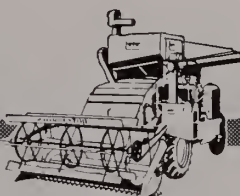
MM UNI-TRACTOR
Piggy-back carrier of
all Uni-Farmor machines.



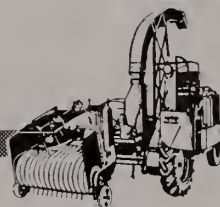
MM UNI-HUSKOR
World Champion
corn picker.



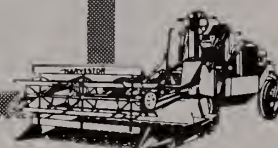
MM UNI-PICKER-SHELLER
Picks and shells corn
in one trip.



MM UNI-HARVESTOR
Self-propelled combine.



MM UNI-FORAGOR
Chops hay and row crops
for silage.



MM UNI-WINDROWER
Windrows hay and grain
10 feet at a swath.

Suppose you could convert your car at will to a station wagon, a convertible, a pick-up, a truck, or a family sedan, mounting whichever body you wanted on the same engine and frame.

A car like that would be really five cars, serving five different purposes, at a cost far less than five standard vehicles.

What a car like that could do for you, the Minneapolis-Moline Uni-Farmor has already done for the farmer. One basic MM Uni-Tractor carries *five* different harvest machines . . . to do *five* different harvest jobs.

Modern MM Uni-Farming gives the farmer a money-making self-propelled machine for crop after crop. And . . . because all Uni-Farmor machines mount on the same Uni-Tractor, this 5-in-1 farming system actually costs far less than conventional tractor-drawn machines!

Many jobs with one basic machine . . . lower production costs for the food and fibre that sustains the nation. That's how MM Uni-Farming serves the American Farmer-Businessman, and all who buy what the farmer sells.

MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA

Benefits of South Carolina Forests

By Ernest B. Collard
PreForestry '56

Forestry, both public and private, has progressed remarkably during the last 25 years in South Carolina. Yet it seems that the progress of the past is but an indication of future development in this field. New wood-using industries are springing up and old ones are expanding to utilize the raw materials produced on the more than 11 million acres of land occupied by forests in South Carolina. Forest land accounts for over 60% of the state's total land area. This land is not only a source of timber; it is used by people for recreation; it provides shelter and a supply of food for the game; it regulates the regimen of streams and prevents the erosion of soil.

The most profitable activity in South Carolina's forests is timber production. The wood-using industries rank, in economic importance, second to textiles only. The forests furnish the raw materials for these industries chiefly in the form of sawlogs, pulpwood, fuelwood, and veneer bolts. Industries utilizing these raw materials account for 42% of all the manufacturing firms of South Carolina, 18% of its manufacturing plant and equipment value, 16% of all full time workers, 15% of the total income, and 18% of all profits of the state.

There is no danger of having a timber surplus. Unlike the produce of the annually harvested agricultural crops, timber, maturing only after the lapse of many years, is in short supply. South Carolina, just the same as the nation, is cutting more saw timber than it is growing. The state's saw timber supply decreased ten percent during the period 1936 to 1947. The quality of the standing timber also declined. Today at least one out of every five trees is a cull. Cull trees are those that are poorly formed, too many limbs, decayed or otherwise defective to have any commercial value. The supply of young trees, the saw timber of the future, has also decreased. This is due mainly to the

uneven distribution of these trees in the state. In some of its parts small trees are overly dense, in others there is a severe shortage of them.

While the present and the future saw timber supply is decreasing the demand for timber has increased. The average annual timber harvest of South Carolina calls for at least five million cords of wood and one billion board feet of saw timber. The heaviest drain on the forests comes from the lumber industry, using about one-half of all the timber cut. The pulp and paper industries utilize about one-fifth of the timber harvested. The remainder of forest products is utilized by furniture plants, veneer mills, crate and basket manufacturing concerns and other wood-using enterprises.

The most developed forest recreational facilities in South Carolina are maintained in the 22 state parks, all administered and managed by the commission of forestry. The recreational facilities of the parks are kept up to foster diverse out-door activities such as picnicking, hiking, camping, swimming, fishing, boating, and others. The desirability of these parks can be judged by the number of visitors utilizing them each year. This number amounts to more than three million. If it is kept in mind that the total population of South Carolina is slightly more than two million, it becomes evident that many guests of the state parks are out-of-state visitors. The visitor load in the parks of South Carolina is greater than that of any other southeastern state. This in turn proves that the state parks are attractive and their facilities accommodating. The demand for accommodations exceeds the supply. It is reasonable to assume, therefore, that the recreational facilities of the state parks are likely to expand in the future.

While the vacationers crowd the state parks, the sportsmen seek their recreation by taking to the forests, lakes, and streams to pit their wits against the wild game and fish.

Hunting and fishing have always been popular sports in South Carolina, a state that can boast of a large variety of game, game-birds, and fish. The importance of wildlife in South Carolina is not limited to recreation, however. It includes specialized commercial enterprises such as fisheries, and fur and game farming; it also involves the role played by the farmer in the maintenance of biotic balance in South Carolina's forests.

One of the highly important and yet comparatively little appreciated functions of forests stems from the influences they exert upon the conservation of water and soil resources of the state. There are many miles of waterways in South Carolina which are important factors in the actual and potential industrialization as well as the irrigational developments of the state. Strategically located forest vegetation regulates, through its influences, the flow of water in these streams, minimizes the soil losses, and the concomitant silting of streams and of reservoirs that may be constructed on these streams. Steady supply of clear water will enhance the permanent, unlimited operations of industries and irrigation projects counting on this natural resource.

Today forestry is a major constituent in South Carolina's economic welfare. The growing demands for forest products and the decrease of timber volume present many and varied forestry problems to the state. We have enough land, but do not have enough trees. With improved management and silvicultural practices, intensified fire protection, better utilization, further industrial development, and research, the forests should become adequate to meet the increased demand for timber, to enhance their recreational uses, to improve the habitat for game and fish, and to intensify the influences the forest vegetation exerts upon conservation of water and soil.

NOW! IH ELECTRALL

**adds another dimension
to tractor usefulness!**

Completely mobile electric power is now a reality for many practical and profitable farm applications. Its source is IH Electrall, now available after years of intensive development. Mounted on a McCormick® Farmall® 400, new International® W 400, or a Farmall Super M-TA tractor, Electrall provides a high-capacity, combined electric generating and distribution system for use anywhere the tractor can be driven.

The **compact Electrall unit** is easily and quickly mounted, or dismounted from the tractor. You need dismount the Electrall unit for only a few seasonally-used, front-mounted implements; otherwise it does not interfere with normal tractor and equipment operation. Neither does it tie up the tractor drawbar, as is the case with a generating unit driven from the power take-off. Electrall operates without interruption whenever the tractor engine is running at rated speed.

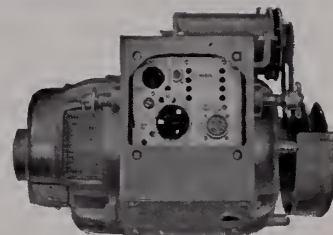
Electrall can pay its way now on farms—providing standby power, driving electric motors to power field machines, and powering portable maintenance equipment. However, great areas of utility and profit are yet to be perfected or developed—through ingenuity of farmers and research of agricultural engineers, soils scientists, agronomists, and other specialists who constantly are extending the applications of electricity to agriculture. The applications of Electrall are *unlimited!*

Write for booklet, entitled, "IH Electrall", for further information. It's free—get yours today.

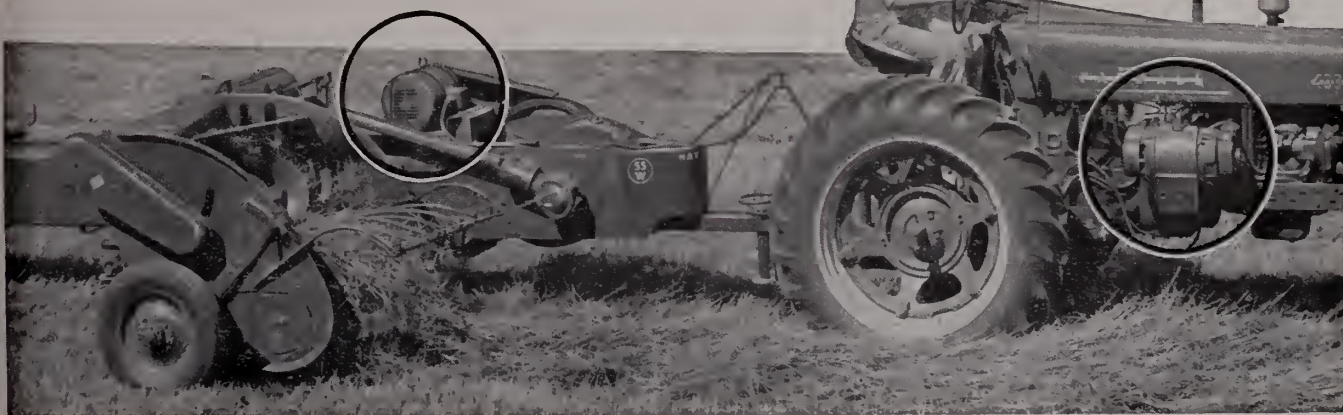


Standby power.

(above) When the power line fails, just plug in Electrall . . . to supply power for your farmstead and keep vital equipment running.



Electrall distribution panel. An outlet is provided for 115-volt 15-ampere, 60-cycle, single-phase power. Another single-phase outlet supplies approximately 6.2 kw for 220/208-volt service. A 10-hp motor can be operated with power from the three-phase outlet. Generator capacity is 12.5 kva. Away from the highline, Electrall powers saws, welders, spray guns, and other electric equipment.



Electrall generator powers a 10-hp Electrall motor to drive a McCormick No. 55-W hay baler.

IH engineering teamwork produced the application of Electrall to the Farmall and International tractors. IH research, engineering and manufacturing men are constantly pooling time and talent to provide equipment of wider application and improved performance to make the farmer's work easier while boosting production.



INTERNATIONAL HARVESTER

International Harvester products pay for themselves in use—McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Crawler Tractors and Power Units . . . Refrigerators and Freezers—General Office, Chicago 1, Illinois.

The Men Who Guide Us

By Watt E. Smith, II

JAMES T. CRAIG

Mr. James T. Craig is married, has three children, ages five, three, and two. He calls Pickens his hometown.

Mr. Craig received a B.S. degree in Agricultural Engineering from Clem-



son in 1951 and has done summer work towards his M.S. Degree during 1954 and 1955 at the University of Georgia. At present he is teaching Farm Shop, Farm Tractors, and a seminar course for seniors. He has taught since 1951 except for six months when he worked with the United States Department of Agriculture.

As an enlisted man with the U. S. Army, he served from 1943 to 1946 and spent two years overseas in Europe. Membership in A.S.A.E. and the Baptist Church along with his hobby of woodworking and sports take up much of his spare time.

ENTOMOLOGY

(continued from page 10)

secticide formulation, and the enforcement of the Pure Food and Insecticide laws.

From these examples of entomological vocations it is obvious that the study of insects provides opportunities for almost every type of person. The student who chooses entomology as a career will find it a satisfying one. It is satisfying because it provides a financial reward comparable to the other sciences; because ento-

DAVID DUNAVAN

Mr. David Dunavan was born in Lakefield, Minnesota in 1895 and was the youngest of six children. He met his wife in Iowa while in service of his country. In 1926, he came



to Clemson and has been here since.

Mr. Dunavan's freshman and sophomore years were spent at Montana State College, Bozeman, Montana. The junior and senior years were at Oregon State College, Corvallis, Oregon and he received a B.S. Degree upon graduation in 1925. In 1928, he received his Master's Degree from Iowa State College. He has worked toward his Doctorate at Cornell University but has not yet received the degree.

His professional accomplishments include membership in the Entomological Society of America and Sigma Xi, an honorary graduate scientific fraternity, and he is Historian of the South Carolina Entomological Society. Also he was South Carolina Co-ordinator for the Entomological Centennial in 1954 and is a member and past president (1953-1954) of the Southern States Bee Keeping Federation.

mology is a pleasing and interesting study with a never-ending variety of problems to be solved; and because it contributes to the health, comfort and economic welfare of man.

GEORGE H. DUNKELBERG

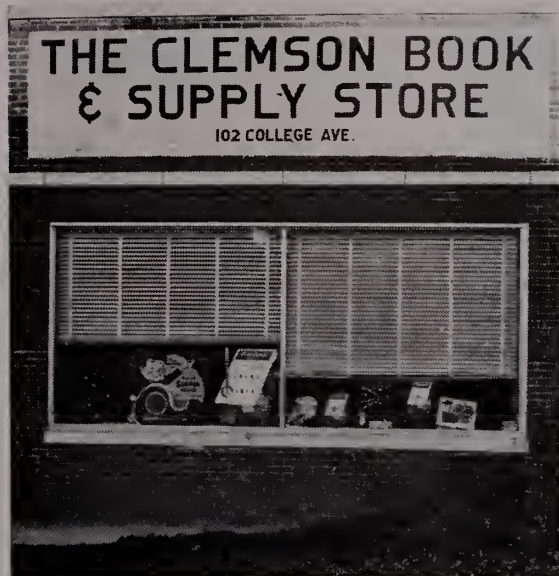
Mr. George H. Dunkelberg was born in Rockford, Iowa in 1913 of English, Irish, and German ancestry. He is married and has three boys and a girl.



Mr. Dunkelberg was outstanding in his class each of the four years in high school. In college his achievements were earning 95 percent of his college expenses and being a member of A.S.A.S. (Student Branch), Cadet Officers Association, Scabbard and Blade, Gamma Sigma Delta, and Alpha Sigma Phi. Outdoor sports is his hobby.

His degrees are in Agricultural Engineering with a B.S. from Iowa State College in 1937 and a M.S. from Iowa State College in 1938. At present he is teaching Farm Structures and Advanced Farm Structures in Agricultural Engineering. He is also an Associate Agricultural Engineer with the South Carolina Experiment Station, and he worked as an Agricultural Engineer for the Foreign Operations Administration in 1954 as consultant on farm buildings for the Republic of Chile, South America.

The U. S. Army had his services during the Second World War as Officer in Field Artillery. He saw action in Europe, was captured, and left the Army as a Major.



THE CLEMSON BOOK STORE
Official College Book & Supply Store

NEW IN APPEARANCE,
OLD IN FRIENDLINESS!!!
WE ARE ALWAYS GLAD
TO WELCOME YOU
BACK TO THE CAMPUS.

L. C. MARTIN DRUG COMPANY
Serving Clemson Men Since 1908



A CHALLENGING CAREER

(continued from page 6)

Agricultural engineering, though still comparatively young, has risen fast in this world of mechanized labor. What lies ahead is to be decided only by those who follow in the wake of a fast moving field of engineering. One thing is for certain. With the population of the world increasing in leaps and bounds, there is a definite need for more well trained agricultural engineers to help the farmers produce the necessary food products.

FARM MECHANICS

(continued from page 7)

supervision of F. E. Kirkley, Associate Professor of Vocational Education at Clemson College. During these workshops, plans are developed for improving farm mechanics instruction. Pamphlets are issued which give many interesting and helpful ideas. In the "Teacher's Guide" an outline is suggested in which the three groups of vo-ag students, high school or all day students, young farmers and adults, are given the various phases of farm mechanics

according to a convenient schedule.

Under the area of farm mechanics can be listed the the home farm shop, farm fencing, farm electricity, power tools, farm concrete, hand tools, safety, painting, farm carpentry, metal work, farm plumbing, farm welding, farm machinery and farm tractors.

This is the machine age. Few mules are seen today as one drives through the country. The farmer must join the march by becoming fully acquainted with farm mechanics.



Which calf is the "money" calf?

Every cattleman knows the answer: Assuming the same blood lines and care, the calf with the *greatest early growth* is your "money-in-the-bank" animal!

TUXEDO CALF FEED is packed with exactly what it takes for that early spurt, and because it's a *complete* calf feed (pellets and coarse feed) that makes gruel feeding unnecessary, you're ahead on time and labor, too!

Fortified with both Vitamin A Feeding Oil and Wheat Germ Oil, rich in Vitamins E and D-2, TUXEDO CALF FEED is a carefully balanced blend of twenty-two food elements guaranteed to supply all nutritional requirements of your calves up to 4 months of age, when supplemented with good legume hay.



Our 74th Year

Your nearby Tuxedo Dealer has it—ask for TUXEDO CALF FEED for greatest early growth without gruel feeding!

THE EARLY & DANIEL COMPANY
CINCINNATI, OHIO

TUXEDO Calf FEEDS

I DARE YOU

(continued from page 3)

Danforth Fellowship when you are a rising senior and to be ready to meet the challenge it offers.

I challenge you freshmen to win the Danforth Fellowship for rising sophomores, which consists of two weeks at Camp Miniwanca. Miniwanca can be even more valuable

to you because it comes at a time in your life when changes are easier to make.

I've purposely told you practically nothing about the fellowship because it can't be put into words without cheapening it. The greatest benefits from it are intangible and very hard to describe. I just want you to believe me when I say that it is an experience that you'll

never cease to reap benefits from. It can very easily be the best thing that ever happened to you—it certainly was for me.

Now to achieve the second part of my goal, I've chosen what I consider jewels of inspiration and/or wisdom from my notes to pass on to you. I hope they mean as much to you as they meant to me.

"Speculation is not gambling, but is assuming a risk of every day living; not **creating** a risk which is gambling." Walter Krings, Secretary of St. Louis Mercant's Exchange.

"Work is a privilege." H. C. Sheaffer, Ralston Purina Company.

"What we have was given us by God, don't complain. The tragedy is not how little He gave us, but how little we use what He gave us." H. C. Sheaffer.

"The Bible is a book for living, not for arguing." Dr. W. R. Courtenay, minister, Nashville, Tennessee.

"Never pass up an opportunity to talk in front of a group or write for a publication." G. W. Morrison, Editor of **Compressed Air Magazine**.

"Most of our difficulties are opportunities that we can't control or recognize yet." Margaret Hickey, Public Affairs Editor of **Ladies Home Journal**.

"Inspiration is fundamental to good life." Margaret Hickey.

"Life consists of rendering service; he who renders best service, most often, for the most people, succeeds." Statler.

"There are very few free people in the world. They are bound by their own limiting thoughts." Jam Handy.

"I dare you to think tall, smile tall, live tall, and stand tall." (symbolic of the four-fold way of living taught at Camp Miniwanca: Mental, Social, Religious, and Physical) William H. Danforth, founder of the Ralston Company and chairman of the board.

"I dare you to be your own self at your very best all the time." Camp Miniwanca.

And **I dare you** to examine yourself thoroughly in this fourfold way. I did it by answering a questionnaire and then having an interview concerning suggested improvements. Since you may never be that lucky, take stock of yourself now and make your improvements. Don't neglect any field in favor of another. You'll be surprised at the results.

Thanks . . .

for the air,
and the water,
and the generous earth . . .

for the miracle of seed,
the promise of blossom,
and the nourishment of fruit.

Thanks . . .

for the dawn,
and the pursuing twilight . . .

for rain,
and snow,
and the glory of the ever-changing year.

Thanks . . .

for music,
and art,
and poetry . . .

for commerce,
and industry,
for invention and achievement.

Thanks . . .

for the steeple,
and the town hall . . .

for the dome of authority,
and the pillar of justice.

Thanks . . .

for kin,
for friend,
for neighbor . . .

for the strength of man,
the courage of woman,
for the confidence of the young,
and the wisdom of the old.

Thanks . . .

for the mind to know,
the eyes to behold,
the hands to use,
and the soul to enjoy
all these things . . .

and for the heart to say—
Thanks!



JOHN  **DEERE**

MOLINE, ILLINOIS

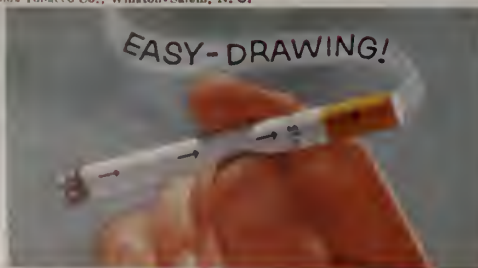
You'll both go for this cigarette!

WINSTON

tastes good—like a cigarette should!



R. J. Reynolds Tobacco Co., Winston-Salem, N. C.



WINSTON
is fun to smoke!

Easy-drawing, smooth-smoking, good-tasting—that's Winston! And that's what it takes to get all the fun of smoking.

■ College smokers know why Winston changed America's mind about filter smoking! This filter cigarette gives you real tobacco flavor — the full, rich flavor real smokers want. And Winston's finer filter works so effectively that the flavor really gets through to you.

Try a pack of easy-drawing Winstons. See for yourself why so many college men and women are getting together on this cigarette. Winston tastes good — like a cigarette should!

**FINER
FILTER!**

**FINER
FLAVOR!**

**KING SIZE,
TOO!**



Smoke **WINSTON** the easy-drawing filter cigarette!

The Agrarian

OFFICIAL STUDENT PUBLICATION

CLEMSON, S. C.

THE CLEMSON A & M COLLEGE

JANUARY 1956



VOLUME XV

NUMBER 2

Agricultural Reference Library
Clemson Agricultural College
Clemson, S. C.

BULK RATE — U. S. POSTAGE PAID
PERMIT NO. 4 — CLEMSON, S. C.

SERVING THE FARMERS
IN NORTH AND SOUTH
CAROLINA SINCE 1906



Planters
Fertilizer & Phosphate Co.

CHARLESTON, S. C.

CHARLOTTE, N. C.

THE AGRARIAN

Featuring . . .

The AG. FAIR

Volume XV The Clemson Agricultural College Number II

Donald B. Anthony Co-Editor	Richard F. Elliott Associate Editor	Elbridge J. Wright Co-Editor
James W. Wright Advertising Manager	Thomas E. Hayden, Jr. Business Manager	Dick Fitchett Circulation Manager

Watt E. Smith	Feature Editor	Jack C. Langston	News Editor
Bill DuBose	Dept. Editor		

Departmental Writers—

Fred McLaughlin, Jr., Watt E. Smith II, Jack C. Langston, and Richard F. Elliott.

Advertising Staff—

James W. Wright, Carol E. Brown, O. R. Bishop, and Emory Bishop.

Circulation Staff—

Dick Fitchett, Earl Little, George Clarke, and J. E. Cox.

Advisory Staff—

B. E. Goodale and T. L. Senn, faculty advisers.
Ray Buck, student adviser.

IN THIS ISSUE

In Memoriam	Page 3
The 1955 Ag. Fair	Page 4
Animal Husbandry Exhibit	Page 5
Agricultural Engineering Exhibit	Page 6
Horticultural Exhibit	Page 7
Poultry Exhibit	Page 7
Entomology Exhibit	Page 9
Agronomy Exhibit	Page 11
Dairy Exhibit	Page 15
Pre-Veterinary Exhibit	Page 15
Dairy Exhibit	Page 15
Seed Certification Exhibit	Page 16
Ag. Economics and Rural Sociology Exhibit	Page 17
F. F. A. Exhibit	Page 17
Botany Exhibit	Page 18
Forestry Exhibit	Page 20
These Students Made it Work	Page 22
Between the Furrows	Page 12
Alpha Zeta	Page 21
Tall Corn	Page 24

AGRARAN PHILOSOPHY

Donald Anthony, Co-Editor

In these modern times a college education is almost a prerequisite to becoming a success in life. The once simple life of the farmer has been greatly complicated by technical knowledge which is required in the fields of breeding, nutrition, fertilizers, diseases, marketing, and many others. Also, before a businessman will hire anyone to work for him, he makes sure that he has the necessary technical knowledge to qualify for the job.

These facts point to one reason for our being in college. We may feel that if we learn about the technical aspects of our field, this will make us a success in it. This is important, of course, but it is only one part of our education. If this is all we get out of college we are wasting a lot of time and cheating ourselves out of invaluable education and experience.

This education does not come from the classroom, but from the church groups, clubs, publications, and projects in which we take part during our campus life. Here we learn how to get along with people, how to work with and for others, and how to get others to work for us. This in itself is worth more than all of our technical training.

A good example of this is the Agricultural Fair which was held October 29 and 30. For several days before the fair, you could go to the Ag. Center any night and find a certain group of students and perhaps one professor in each department working into the late hours preparing their exhibit for the fair. These boys were getting nothing in the way of credit or money for their work.

However, unconsciously these students were getting invaluable experience in how to cooperate and get things done, and in association with men of importance. After all, a child can learn to run a machine, but before he can become a man, he must learn how to get along in the world. The same holds true whether you are working with a church group, putting out a publication, or working on a club project. In the game of life, these experiences will always help you to keep two jumps ahead of the "two bit technician", whose extracurricular activities probably consisted only of a dance or two, a few ball games, and seeing all of the new movies in town.

PILLSBURY'S BEST

POULTRY & LIVESTOCK FEEDS

Dr. Salisbury's Vaccines & Remedies

Field Seeds

Farm Seeds

Insecticides

Fertilizers

Hay and Grain

COUCH'S

FEED & SEED STORE

1804 Easley Bridge Road

Phone 3-9993

"YOUR FRIENDLY FARM STORE"

52 YEARS OF SERVICE
TO SOUTHERN AGRICULTURE



"The South's Foremost
Seed Breeders"

COKER'S PEDIGREED
SEED CO.

HARTSVILLE S. C.



Write for Catalog and Prices

COLUMBIA SUPPLY COMPANY

Columbia, S. C.



Compliments
of a
Friend

There's Pay Dirt
in
Aromatic Tobacco

Many Farmers In The Piedmont Section
Of S. C., N. C., Ga., Tenn., And Va., Have
Found "PAY DIRT" In The Production
Of Aromatic Tobacco For Which South-
eastern Affords A Ready Market.



SOUTHEASTERN
Aromatic Tobacco Co.

1628 East River Ext.

ANDERSON, SOUTH CAROLINA



MR. WILLIAM H. DANFORTH

In Memoriam

The Agrarian expresses the sorrow of the faculty and students of the School of Agriculture of the Clemson Agricultural College in the loss of a great friend of many years — Mr. William H. Danforth.

His friendship and great work will long be remembered. He was a great Christian leader, an inspiration to young men, an example of the best in industrial leadership, a personality that stimulated all who knew him to do better than their best, and his "I Dare You" will continue to challenge all of us to use his teachings to help ourselves and others.

THE AGRARIAN

presents

1955 AG FAIR

The Fair

By Ray Buck

An estimated five thousand persons attended the 1955 "Student Agricultural Fair", sponsored by the South Carolina Chapter of the Fraternity of Alpha Zeta. The fair which is a biennial event, was held this year in the new Plant and Animal Science Building and Food Industry Building. The majority of the visitors were from South Carolina and neighboring states but, the register showed visitors from such distant points as California, Oregon, Idaho, Nova Scotia, and even London, England.

The theme of the fair was "Preparing for a Career in Agriculture." Two publications calling attention to career opportunities for college agriculture graduates were available for visitors. Each of the sixteen departments developed displays following this theme. Awards were given for departmental exhibits and individual displays. These prizes consisted of a ribbon and ten dollars for first prize, seven dollars for second and five dollars for third. Mr. D. W. Watkins, former Extension Director and presently Master of the Grange; Dean H. L. Hunter, Dean of the School of Arts and Science; and Mr. A. H. Ward, District Extension agent at Aiken, served on a committee to judge the exhibits.

The first prize for departmental exhibits was awarded to the Animal Husbandry Department. Fred McLaughlin, Jr., was Student Chairman of the department. Displays included sheep and wool, production equipment, meat equipment, meat display, feed consumption, meat from producer to consumer, kinds of feed, and job opportunities.



Ray Buck, shown with Judges D. W. Watkins, A. H. Ward, and Dean H. L. Hunter who judged the exhibits for the 1955 Ag. Fair.

Second prize went to the Horticultural Department with H. E. Crane as Student Chairman. Horticulture displays consisted of a model landscape, plant propagation, vegetables for vigor, everything from fruits to nuts, and horticultural advancement due to research.

The Agronomy Department was awarded the third prize, J. D. Hicks, Jr., was Student Chairman and displays included crops, soils and a guessing contest.

The first prize for the best individual display went to the Agricultural Engineering Departments sand table. This was a very detailed exhibit showing a model farm lay out using recommended practices.

The second prize was awarded to the Entomology and Zoology Departments exhibit "Careers in Entomology and Zoology." This display showed the opportunities available for graduates in these fields.

The Dairy Departments' Blue Cheese display was awarded the third prize. In this display the various stages in the production of Blue Cheese were shown.

The newly selected 1956 Maid of Cotton, Miss Betty Lane Cherry of Orangeburg, reigned as Queen of the Fair. Miss Cherry was on hand to welcome visitors. Her beauty and charm added much to the success of the fair.

(continued on page 20)

Animal Husbandry Exhibit

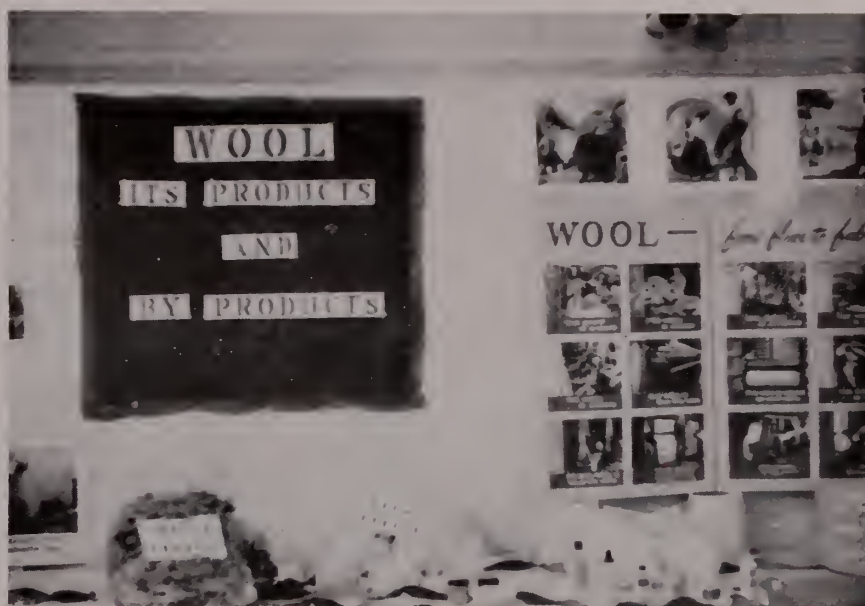
Fred McLaughlin, Student Chairman

At the Clemson College Agricultural Fair, the Animal Husbandry Department topped all other departments by winning first prize for departmental exhibits. One of the many exhibits that contributed toward our winning was the sheep and wool display. This was considered a very interesting exhibit for the public. It contained samples of clean wool grades according to U.S.D.A. standards. It also showed the products and by-products of the wool industry.

A very interesting display was a "meat from producer to consumer" display. This was a novelty display in which an electric train was traveling around a track that had different sections of the Nation represented around it. It brought to the public's attention that meat travels an average of 1,000 miles from the time it leaves the producer until it is meat on the table.

Since much equipment is used in producing and slaughtering meat animals, we had a display of meat and production equipment. Dehorners, castration equipment, halters, etc., were shown for production equipment, and sticking knives, steak knives, bell scrapers, etc., were shown for meats equipment. A meat display was set up in the refrigerated rooms. A complete hog carcass was cut into its wholesale cuts. Two pork loins were shown to show the difference in fatness.

To show the public how much feed it requires to produce meat, a feed requirement display was set up. The feed required to produce one hundred pounds of pork, beef, and mutton, in its actual proportions. It was quite a surprise to most of the public to see the large amount of feed



Part of the Sheep and Wool display depicting the importance of wool in world commerce.



Display showing the importance of knowing the standard grades of livestock.

an animal eats to produce one hundred pounds of gain.

The members of the faculty and the students who worked untiringly on the exhibit are to be highly commended for the excellent work they did in helping make the Ag. Fair a success.

Agricultural Engineering Exhibit

C. M. Kowalski, Student Chairman

The Clemson Student Branch of ASAE was in charge of the Agricultural Fair in the Agricultural Engineering Department. Since the theme was "Preparing for a Career in Agriculture", we based our display on the very beginning of the service, **education**, and worked through to an ideal farm. That is, we began with the study of the four phases of Agriculture Engineering. On a table we had the four text books which pertain to these four phases, Soil and Water Conservation, Farm Electrification, Farm Structures, and Power Machinery. It is from these text books that we get the very fundamentals of our profession. Following this was a drawing table upon which were placed four working drawings that the student himself does in class during his course of study.



Sand table display showing a model farm lay out.

In the background were four individual displays, still pertaining to the four phases of Agricultural Engineering. Each display was prepared by the students in the lab, and much work and thought were put into each. A transit, level, tripod, and range pole along with irrigation pipe and pump, displayed what one may encounter if he is dealing with soil and water conservation. Posters were used as aids to clarify this equipment.

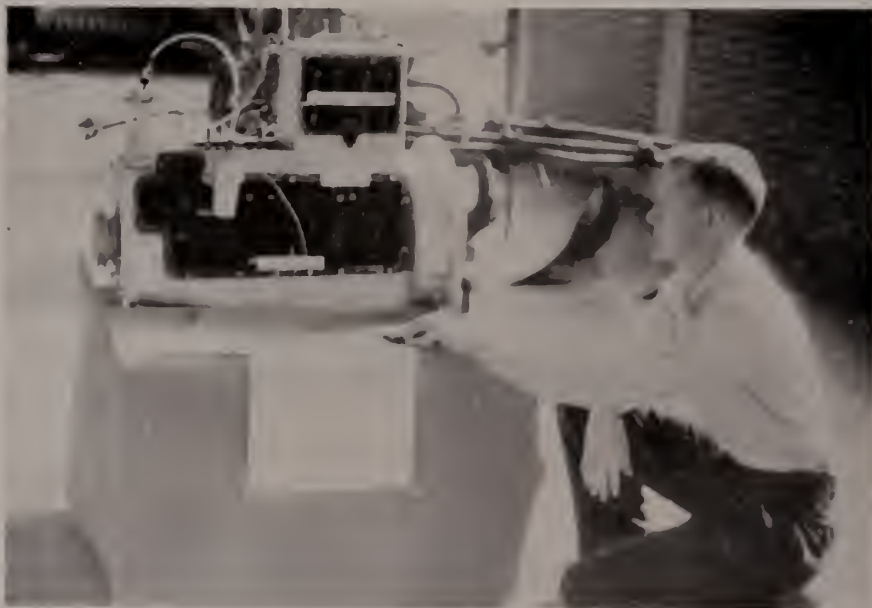
In Farm Electrification different pumps were displayed with cut-away views to show the working parts. A small pump was set up in a container of water and was continuously pumping. Also in this display was a chart of wire sizes, the ones which a builder will deal with in constructing his house.

Under Farm Structures, correct and incorrect joints of wood were placed on a table. This clearly showed the advantages of the correct, and faults of the bad joints. A small frame structure of a pole barn showing the set up of the poles to secure maximum room for equipment and other farm goods was placed along with the display on wood joints.

In the power and machinery display, students had constructed a tractor engine with a cut-away view of the valves and other parts in operation. This motor was geared to a small electric motor which moved the parts much slower than an ordinary engine would run.

From these four individual displays a scale model farm was set up on a sand table. Here was shown the good farming practices with special emphasis on soil and water conservation, farm electrification, farm structures, and power and machinery.

Thanks go to the faculty and students of the Ag. Engineering department whose hard work produced these exhibits.



Cutaway model of internal combustion engine prepared by Ag. Engineering students.

Horticultural Exhibit

Harold Crane, Hort. '56

In keeping with the theme of the Ag Fair, the Horticulture Club divided its profession into five major fields. These fields are: landscaping, nursery, fruits, vegetables, and research. An individual exhibit was prepared for each of these fields. A poster was placed in the center of the exhibits, and streamers extended to each of the exhibits.

The landscaping exhibit represented the complete landscaping of a small home. Directly behind the model was a detailed drawing of the layout, giving plants used and quantities. The nursery exhibit consisted

of a model sales yard and displays of various propagation methods, including cuttings, grafting, budding, and rooting. The fruit exhibit displayed the various fruits grown in South Carolina, which included apples, peaches, and grapes.

The vegetable exhibit was divided into three layers, each depicting the three subdivisions of the state's farming areas: Piedmont, Sandhills, and Coastal Plains. Vegetables from each subdivision were displayed on their respective layers. The research exhibit served to unite the entire display by showing publications pertaining to each of the preceding fields.

This exhibit was located in the cannery of the new food industries building. Credit should be given to Prof. Van Blaricom and to the Horticultural Club members who pre-

pared this attractive exhibit which received second prize for departmental displays.

Poultry Department Exhibit

Carl Outz, Student Chairman

In accordance with the theme of the Ag. Fair which was "Preparing for a Career in Agriculture," the poultry exhibits were designed primarily to show the many opportunities offered to college graduates in the poultry industry. These careers were broken down into the fields of: 1—marketing and processing poultry and poultry products, 2—poultry breeders and hatchery-
(continued on page 9)



Exhibit showing breakdown of Horticultural field.



Prof. J. B. Cooper observes a section of the poultry dressing line

Where **FAULT-FINDING** is a *Virtue*

Now all of us know that fault-finding isn't the recommended short-cut to winning friends and influencing people. Still, there is a place for it—even an honored place—in industry. That's when fault-finding is the by-product of *fact-finding*, basic function of a practical Quality Control program.

We see it work every day at John Deere. Here, dozens upon dozens of "professional fact-finders" are stationed at strategic points throughout John Deere factories, charged—with the help of tens of thousands of instruments and gauges—to probe the vital statistics of manufactured parts, record them, and to expose fault where fault exists.

These men, of course, carry out but one phase—the inspection phase—of the John Deere Quality Control program—a program, incidentally, that

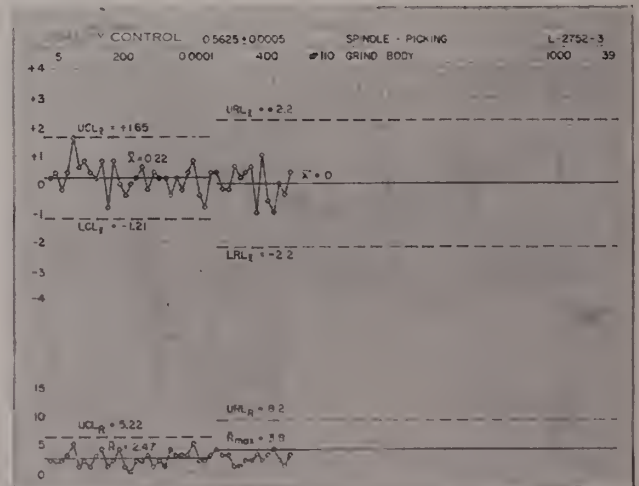


embraces the entire scope of manufacturing. Others are just as busily engaged in tabulating these facts and translating them in terms of indicated manufacturing procedure.

The Quality Control program is John Deere's way of making sure that each unit leaving the assembly line stands, trim and efficient—a quality product—ready for the field and ready to serve the cause of better farming.



Here an operator is grinding the body diameter of a cotton picker spindle. The control chart on this machine or work stations in the John Deere factories and is designed to assist the operator and supervisor in maintaining tolerances.



This chart is much like the one in the picture at the left and shows how statistical analysis is used to indicate the ability of the process to maintain established tolerances. The projected lines are guide lines used by the operator to aid him in maintaining these tolerances—all part of the John Deere statistical quality control system.

JOHN DEERE
Quality Farm Equipment



Moline, Ill.
Since 1837

POULTRY EXHIBIT (continued from page 7)

men, 3—poultry production, and 4—nutrition.

First, representing the career field of marketing and processing poultry and poultry products, the visitors made a tour through the dressing plant. Here they saw birds in the various stages of dressing and processing, and the type of equipment which would be used in a modern dressing plant. Also under this field was shown examples of the various grades of eggs and egg grading and weighing equipment.

Under the field of breeders, progress was shown in the increase in the number of eggs produced and the efficiency of feed conversion as compared to ten years ago. This was shown by the use of live birds and the amount of feed used to produce them. The field of hatcherymen was represented by an incubator in which chicks were hatching during the fair. Also live embryos were shown in the various stages of development.

The broiler field of poultry production was represented by a model brooder room with chicks under infrared heat. A demonstration consisting of hens in laying cages showed how eggs might be produced by either a large or a small producer.

The complexity of a nutritionist's career was shown by dividing a modern poultry feed into its many ingredients and showing what each ingredient furnished. As added attractions there was a demonstration showing four eggs supporting 160 pounds of calcium, and a guessing contest in which a frozen turkey was given away.

We hope that the people who saw these exhibits are now better informed on the phases of poultry production. Credit for preparing these exhibits should be given to Prof. J. B. Cooper and the students majoring in poultry who worked on the exhibit for their excellent job.

Entomology Exhibit

Jack Langston, Student Chairman

Carrying out the theme of the Agricultural Fair, the display of the Entomology Department gave emphasis to careers in agriculture, with



A portion of the Entomology exhibit showing prospective fields for Entomology graduates.

specific application to careers in entomology. The display illustrated the three main fields entomology graduates normally enter. These fields are: private industry, Federal government, and State government work. The main jobs brought out in the display were such things as pest quarantine, pesticide research and development, teaching, extension work, and technical services.

The exhibit further reflected the type training given entomology students here at Clemson with displays of preserved and living specimens. This phase of entomological training is the most important, as it is the basis for identification and classification of insects. Raising insects under these laboratory conditions gives the student a closer insight as to

(continued on page 11)



WOOD'S

TESTED SEEDS

Headquarters for FLOWER, FIELD &
GARDEN SEEDS • HYBRID CORN
BRED IN AND FOR THE SOUTH



T.W. WOOD & SONS

RICHMOND, VA. SEEDSMEN SINCE 1879

Etiwan Fertilizer Co.

CHARLESTON, SOUTH CAROLINA



Independent – Prompt – Reliable



— Manufacturers Of —

DEPENDABLE FERTILIZERS SINCE 1868

LEE'S Amoco Service Station



Most Modern Station in Clemson

CLEAN REST ROOMS

Honoring Courtesy Cards of
All Major Oil Companies Soon



Telephone 6696

Security Feed & Seed Co.

Phone 25605 217 Laurens Rd.

GREENVILLE, S. C.



The South's Most Complete
Farm & Garden Store



"Security Feeds"

ENTOMOLOGY EXHIBIT

(continued from page 9)

their habits and life histories, from which valuable information can be gotten.

Worked in very appropriately with the entomological exhibit were the zoological displays. A study of zoology is essential before the student can advance into a specialized biological science as entomology. It is from zoology that the student gets his basic understanding of animal life, progressing from the simple one-celled animals on up to man. From zoology the student learns where insects belong on the scale of animal life in comparison with the other animals.

With this type training shaping his background, the student prepares himself to meet with the entomological problems of mankind.

Thanks go to the faculty and students who, through few in number, prepared an excellent exhibit.

Agronomy Exhibit

By Bill Dailey

The Agronomy Exhibit at the Agricultural Fair enlightened many misinformed and inquisitive viewers of the scope of the Agronomy field. The Agronomy Club with the help of faculty advisers achieved its goal by presenting a distinct breakdown of the various phases of Agronomy.

The exhibit was shown in the showroom of the Food Industry Building. The high hanging sign with Agronomy written with the important crops and soils of South Carolina provided a colorful, eye-catching introduction for approaching spectators. In an attempt to give a clear-cut picture, the two main divisions, crops and soils, were shown by two signs placed to the left and right and immediately under the main heading. These two divisions were broken down into their respective components with exhibits which best represented each component. At this point, it is appropriate to discuss these two phases in some detail as they were pictured to the spectators.

Crops were presented in a very precisely outlined and informative arrangement of field crops, forage

crops, lawn grasses, and plant breeding. Of these exhibits, the plant breeding in the form of in-breeding and cross of corn to obtain a hybrid variety received most attention. This subject was carried out with actual corn stalks from the field plots of commercial layouts.

Four lines of corn were inbred for a period of seven years, and the exhibit contained one stalk of each of these line's end products which was labeled A, B, C, and D. The next step was to combine these four lines

Some newly developed lawn grasses made a fine showing also. Because of the emphasis being placed on home grounds beautification, this was a timely demonstration since it rated some of the leading old grasses with these new grasses. The new ones were tiplawn and tiffine, which are bermudas along with meyer, emerald, King, and matrella which are Zoyias.

The soil profiles, a vertical slice of soil, were very appealing while they represented formation and classifica-



Prof. W. B. Boykin points out to Miss Betty Lane Cherry, Maid of Cotton, some of the soil profiles in South Carolina.

into two lines and this was done by crossing A to B and C to D. These two crosses were shown with two larger stalks which also produced more grain than the original four lines. These characteristics were brought about by hybrid vigor. This vigor, which is actually what the breeder was striving for, is carried over to the next generation which is the cross between AB and CD. The plant ABCD which is the end product of this process in the seed the farmer plants. To sum this demonstration up, the program was begun with four inbred lines and these were combined until one line, a hybrid variety, resulted.

tion of soil. Never before had some people realized what a cross-section of the soil on which they walk looked like until they saw these colorful profiles. These slices were actually taken from fields and placed on a piece of varnished pine.

Agronomy as a profession presents a large variety of opportunities, and the exhibit achieved its purpose by developing a general concept of the field. After an observation of the presentation, a person could hardly disagree that there isn't "more in the land than there is in the man." Credit for this exhibit goes to Dr. W. B. Boykin and the agronomy students whose efforts won the third prize.

**ALPHA ZETA NEWS**

The members of the South Carolina Chapter of the Fraternity of Alpha Zeta have relaxed since the Agriculture Fair, knowing that there won't be another one for two years when all of the present members will have graduated. The November issue of **The Agrarian** (sponsored by the fraternity) has been mailed out and the January issue is well on the way to publication at this writing.

The members of the fraternity voted that since most of the year's business is completed, every other meeting be used as a program meeting rather than a business meeting.

BLOCK AND BRIDLE CLUB NEWS

The Block and Bridle Club sent two delegates to the national convention in Chicago, which was held November 27-30. The two delegates were Thomas E. Hayden, Jr., an animal husbandry senior from North, S. C., and Joyce E. Cox, an animal husbandry junior from Loris, S. C. The delegates had a very good trip with the club paying most of their expenses. They particularly enjoyed visiting the National Livestock Show.

AG. EC. CLUB BECOMES A.F.E.A.

The club formerly known as Agricultural Economics Club here at Clemson is now **STUDENT SECTION OF AMERICAN FARM ECONOMIC ASSOCIATION** and shall be known as AFEA.

This change has been brought about by the club having received its National Charter and also having received its own official key. The function of the club shall remain as in the past: to promote interest and fellowship among students majoring or interested in Agricultural Economics.

At present, the club is trying to secure a permanent Club Room and plans are being made to have a party in honor of the students graduating in January.

A cordial welcome is extended to all Agricultural Students planning to major in Agricultural Economics to contact any member of the officers or Dr. J. M. Stepp about joining the club.

The officers for this school year are: Carl D. Lewis, President; Donald (Donk) Moore, Vice President; J. L. Madden, Treasurer; Laurice F. Rhem III, Secretary, and Dr. J. M. Stepp, Advisor.

VAN LOTT, Inc.

430 Meeting St. West Columbia, S. C.

Distributors of

IRRIGATION EQUIPMENT

WEBSTER PIPE

JAEGER PUMPS

RAIN BIRD SPRINKLERS

BERKELEY PUMPS

G. M. DIESELS



WEBSTER PIPE CONNECTIONS



COATS REPRESENTS A.T.A. AT KANSAS CITY

W. G. Coats, a junior in V.A.E., represented the Clemson College Chapter at the National Alpha Tau Alpha Convention at Kansas City, Missouri. Mr. Coats left Clemson by train on Sunday, October 9 and returned Wednesday, October 12. Each year Collegiate Chapters are invited to send delegates to the National Convention paying their transportation to and from the convention. Although primarily a representative to the National Alpha Tau Alpha Convention, Mr. Coats also participated in some of the activities of the National F.F.A. Convention.

Alpha Tau Alpha, a National Professional Agricultural Education Fraternity, is an organization on college campuses composed of young men in training to teach Vocational Agriculture. Members are selected on the basis of their scholastic abilities, leadership, and their desire to contribute their utmost to Vocational Agriculture.

At the last meeting of the Kappa Chapter, two members were formally initiated into the organization. These two men were J. C. Keaton, a junior

in V.A.E., and Sherwood M. Miller, a sophomore in V.A.E. Old members include W. G. Coats, O. T. Price, Jr., Sam Hair, Carl Stoddard, and E. L. Gerald. Mr. B. H. Stribling is the chapter advisor.

CLEMSON F.F.A.

The Clemson Collegiate Chapter of Future Farmers of America is composed of members of all four classes who are majoring in Vocational Agriculture Education. This year the Chapter has 36 members. Its officers for first semester are: President, Joe Watson; Vice-President, O. T. Price; Secretary, Danny Dantzler; Treasurer, Carl Stoddard; Sentinel, Bill Page; Reporter Sam Hair; Advisors, Mr. F. E. Kirkley and Mr. W. C. Bowen.

Some of the activities of the Chapter thus far this semester are: At the second meeting the Chapter had an initiation of the Greenhands, at the third meeting Mr. Stribling and William Coats spoke on the trip to the National F.F.A. Convention at Kansas City. The Chapter had a joint meeting with F.T.A. in December and Mr. Ruggles of Daniel High School spoke. The Chapter had an exhibit in the Agricultural Fair last October.

Big Oak Ranch

BRAHMA — HEREFORD — ANGUS
CROSSES

and

Registered BRAHMAS and HEREFORDS

Importers and Breeders of Mexican Burros

Mount Pleasant, S. C.

Ray M. Buck, Owner

W. B. Camp & Sons, Inc.

Bakersfield, California

and

Gaffney, South Carolina

Buckfield Plantation

Yemassee, South Carolina

COBLE DAIRY Cooperative, Inc.



DIAL CA 5-5491 FOR
HOME DELIVERY



FARMER OWNED

2802 N. MAIN ST. ANDERSON, S. C.

Farmer Owned — Farmer Controlled

Open Formula Feeds

Seeds of Known Origin

Complete Line of Farm Supplies



Greenville FCX Service

224 Pendleton St. Ph. 5-3224

GREENVILLE, S. C.

Dairy Exhibit

B. L. Ragsdale, Student Chairman

The Dairy Club participated in the Agricultural Fair by presenting exhibits which portrayed the theme "Preparing for a Career in Agriculture". The dairy industry laboratory of the new Food Industries Building was used for the first time in displaying the exhibits.

A "Sellabrand" advertising unit was the first exhibit seen on entering the lobby of the dairy industry. This device consisted of a movable paper milk carton connected to a tape recorder, which welcomed people to the dairy exhibits through the voice of Prof. B. E. Goodale. Another exhibit, the Clemson bull stud, was presented to the public through a series of pictures depicting several sires with their daughters. The stud has been one of the factors in improving dairy cattle in S. C.

Winner of the third place award for individual exhibits was an exhibit depicting the various stages through which milk is processed to make the famous Clemson Blue Cheese. Next the visitors approached an exhibit entitled "Growing with the Dairy Industry in S. C." Enclosed in a pen of high quality alfalfa hay was a young heifer calf, and above the pen was a picture of a mature Holstein cow. This exhibit represented the industry's growth from an infant to the mature stage. The final exhibit in the lobby was a display of careers open to dairy graduates. These careers included all vocations from farming to dairy manufacturing, management, and advertising.

One of the most interesting parts of the dairy exhibits was the display of the new equipment in the dairy laboratory. This lab has not been completed, but one of the most interesting pieces of equipment was an ultra-modern pasteurizer which is the only one of its kind in an agricultural college. In a rear room of the lab an exhibit showing some of the tests which insure the public that every bottle of milk is a safe, clean, wholesome product.

The Dairy Club hopes that this exhibit enlightened the public as to the careers in dairying. The faculty members of the Dairy Department and the Dairy Club members did an excellent job in preparing and presenting their exhibit to the public.



Dairy Products Lab.

Pre-Veterinary Medicine

Jim Scaife, Student Chairman

The students studying Pre-Veterinary medicine at Clemson College are organized under the counsellorship of Mr. J. R. Cook of the Animal Husbandry Department. With his assistance, the Pre-Veterinary students presented a display at the Agricultural Fair. The theme of the display was to present the advantages offered in a career of Veterinary Medicine. Although Clemson College does not offer a degree in Veterinary Medicine, the two year Pre-Veterinary course is offered and prepares a student for entry into the School of Veterinary Medicine at the University of Georgia.

The Pre-Veterinary display was divided into three sections. The first section included a display of medical instruments used by veterinarians in general practice. Many of the instruments were familiar to visiting farmers and animal breeders. The variations of sizes and unique construction of many instruments created much interest with students and other visitors to the Ag. Fair.

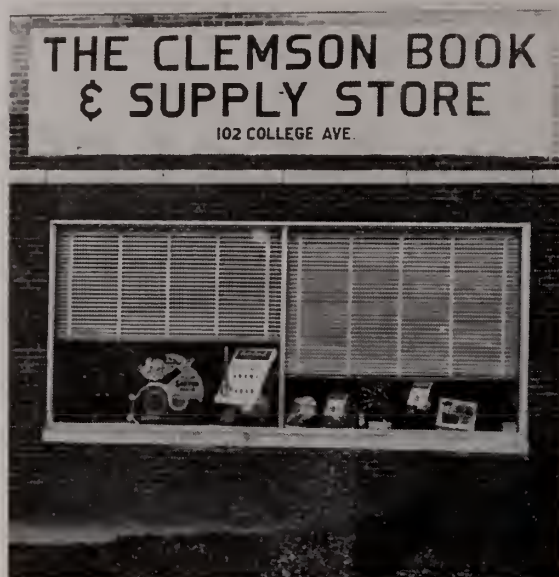
The second section of the display presented a large collection of different medicines used in the preven-

tion and cure of animal diseases. Most of the popular animal medicines were represented and also many new medicines that have only been released to the public in recent months. There was great surprise expressed by many of the visitors in finding out that animals are treated with many of the same medicines that are used in the treatment of humans.

The third part of the display was devoted to the displaying of information booklets. The booklets included information on the prevention and cure of many common diseases. Some of the booklets described the new medicines that were presented and the uses of medicines. All visitors were offered the booklets, and hundreds of the booklets were distributed in that manner.

Throughout the entire Ag. Fair, one of the Pre-Veterinary students was at all times in attendance at the display. The student explained and answered all questions pertaining to a career in Veterinary Medicine. It is the hope of the Pre-Veterinary students that the public is now more informed of the great advantages offered in the field of Veterinary Medicine.

Thanks go to Prof. J. R. Cook and the pre-veterinary students whose work made this exhibit possible.



THE CLEMSON BOOK STORE
Official College Book & Supply Store

**NEW IN APPEARANCE,
OLD IN FRIENDLINESS!!!
WE ARE ALWAYS GLAD
TO WELCOME YOU
BACK TO THE CAMPUS.**

L. C. MARTIN DRUG COMPANY
Serving Clemson Men Since 1908



What's in the Bag? Seed Certification

V. A. Rogers, Student Chairman

The Seed Certification Department at Clemson is headed by Mr. Robert H. Garrison. Mr. Garrison is also secretary and treasurer of the South Carolina Crop Improvement Association and recently at the annual International Crop Improvement Association meeting at Winter Haven, Florida he was elected president of this association which includes all of the United States and Canada. He organized Seed Certification work in South Carolina in 1946 and now is Head of Seed Certification—Foundation Seed Department at Clemson. This program has meant much to

progress of agriculture in South Carolina and is recognized as one of the outstanding Seed Certification Agencies in the United States.

The purpose of the seed certification display in the Agricultural Fair was to maintain and make available to the public information about the high quality seeds and propagating materials of superior varieties so grown and distributed as to insure genetic identity. Only those varieties that contain superior germ plasma are eligible for certification. Certified Seed is high in varietal purity and of good seeding value.

Varieties eligible for certification have resulted either from natural selection or through systematic plant breeding. In either case without a

planned method for maintaining genetic purity, there is grave danger of losing varietal identity.

Varietal purity is the first consideration in seed certification, but other factors such as weeds, diseased, viability, mechanical purity, and grading are also important. One of the most effective methods of preventing the wilder distribution of weeds is to plant weed-free seed. Adverse effects of plant diseases can be reduced by planting clean seed from disease-free fields. Properly cleaned and graded seed is easier to plant and gives more uniform stands.

So this exhibit was displayed with the idea of promoting to the farmer not only a way of maintaining the genetic purity of superior crop varie-

ties, but also reasonable standards of seed conditions and quality. Mr. R. H. Garrison, Head of the Seed Certification Department, should be commended for this enlightening exhibit.

The AFEA and Rural Sociology at the Agricultural Fair

Carl Lewis, Student Chairman

The Agricultural Economics and Rural Sociology Department tried to show through their exhibits what a "Career in Agriculture" would have to offer a person in the form of an occupation after receiving a B.S. degree in this field.

We began this by having a model

Rural Sociology stepped forth with the exhibits of two farms; one showing the lay-out before good farm practices and community environment were considered and the other showed the lay-out after one had educated himself on good farm practices and had taken beautification of his home and farm, along with the farm buildings, into consideration from a community welfare standpoint.

A display of two market baskets containing the items bought by the average family for a week were used to show how prices change and to inform one that the field of statistics was a good career and in need of individuals wanting to become statisticians.

The final display was of publications that are published by the Agricultural Economics Extension Service on the research problems they



A portion of the Ag. Economics Exhibit showing the connection between Economics and Agriculture.

tobacco warehouse. One choosing to specialize in Marketing could easily find himself working with farmers, tobacco buyers and warehousemen if he chose to work with Price Marketing Service of USDA.

The method of packing watermelons for rail shipment using the cross-wise pack was used to stress the Field of Research, as was the milk vending machine. Both of these exhibits have been tested within this state and have shown how they both could help make money for the farmer.

have undertaken and completed and a map of South Carolina was displayed showing the locations of the various Co-ops in the state and the services they have available to the farm family. Credit is due to the faculty advisers and the students who worked on this exhibit for the good showing it made.

A WORD TO THE WISE
—ADVERTISE—
IN THE AGRARIAN

The Agricultural Teacher and his Job

Joe Watson, Chairman

In the recent Agriculture Fair, the Collegiate Chapter of Future Farmers gave a brief outline of the training and activities of a vocational agricultural teacher. Agriculture teachers of South Carolina represent the largest group of Clemson men in the teaching profession. Over 90 per cent of the white teachers of agriculture in South Carolina are trained at Clemson. How are agriculture teachers trained? What are the duties of a teacher in vocational agriculture? These and similar questions were used as the theme for the F.F.A. exhibit.

The first phase of the exhibit showed the pre-service training at Clemson for a prospective teacher of agriculture. This was divided into three main divisions: (1) Arts and Sciences, which included such courses as Math, Chemistry, English and Government; (2) Agriculture, which includes courses in Farm Crops, Biology, Feeds and Feeding and Fertilizers; and (3) Education, which includes Educational Psychology, Health Education and Problems in Adult Education. These are only a few of the requirements for vocational agriculture teachers. Directed teaching, often spoken of as **Practice Teaching**, is provided for at 24 high schools in various areas of the state. These training centers, as were shown on a map, provide each senior with six weeks of actual teaching.

The second phase of the exhibit showed some of the ways an agriculture teacher can improve himself professionally. In the summers he can take short courses or graduate work at Clemson. During the school term, graduate work is offered at Clemson, Florence and Blackville. He can attend meetings and workshops designed for agricultural workers. He is provided with teaching information from the Agricultural Education department, Extension Service, and Experiment Station.

The third phase of the exhibit showed the location of vocational agricultural departments and various teaching devices used by teachers. At present there are 202 departments and 222 white teachers in

South Carolina. The various teaching facilities include sweet potato curing houses, canneries and farm shops, in addition to visual aids and projectors. This indicates that agriculture teachers do much of their teaching outside the classroom.

The fifth phase of the exhibit consisted of photographs of various activities carried on in a program of Vocational Agriculture. The teacher teaches farm boys, young farmers, and adults. "In Agriculture, people learn to farm by farming." Each boy taking agriculture is required to carry on a supervised home program. The instructor teaches in the field as well as classroom.

The following are some of the desirable features of teaching agriculture as a profession. The teacher becomes a leader in the local community. He works on a 12 months basis. During the summer he supervises the farming programs of both youth and adults, provides recreation for the F. F. A. members, attends agriculture teachers conferences, supervises the community services such as the cannery and shop, and attends summer school.

Each agriculture department has an F. F. A. Chapter. Some of the purposes of this chapter are: to strengthen the confidence of the farm boy in himself and his work, to improve the rural home and its surroundings, and to advance the course of vocational education in the public schools. The members develop leadership by serving as officers of the chapter.

The exhibit showed a graph of the status of Clemson graduates from 1918 to 1941. This study was made by one of the professors of Vocational Agricultural Education at Clemson. Of all the vocational agriculture graduates during this time 60 per cent are still teaching. Most of the others are in some phase of agriculture.

I wish to thank the faculty members and the students whose cooperation made these exhibits possible.

It's not enough to have a good aim in life, you have to pull the trigger, too. Which reminds us that big shots are just small shots who kept on shooting.

Botany Exhibit

J. A. Richardson, Chairman

The botany exhibit followed the general theme of the fair—the preparation of a career in agriculture. The science of botany was presented to the classroom and in research. It was shown to begin with that botany is the fundamental science in agriculture. This fact was represented throughout the whole exhibit.



A portion of the Botany Exhibit showing various equipment used in Botany courses.

Models of plants and plant parts were used to show the structure of plants. Microscope were set up to show the parts in more detail and in true to life forms. The activities that take place in plants were shown by slides and charts.

The four major branches of botany as shown by the exhibit are plant pathology, microbiology, plant physiology, and herbicides. Each of these were broken down and their practical uses were shown.

The activities under plant pathology were shown to be research, academic, extension, and industrial. These activities were explained and illustrations were shown to give some idea as to what each one covers. These exhibits showed the field of studying plant diseases to be ad-

vancing rapidly.

Next came the exhibit on microbiology, or bacteriology. The importance of sanitation was stressed through exhibits on the proper methods to keep out unwanted bacteria. Not only the desirable, but also the undesirable bacteria were recognized. Soil microbiology was shown to be of great importance to the whole science of agriculture. The industrial uses of bacteriology were also shown.

The exhibits concerned with plant physiology covered some of the modern methods of studying plants and their activities; for example, radioactive tracers are being used. Mineral nutrition is an important field to all forms of life because all forms of life depends on plants.

Some of the new developments in herbicides were shown. This field has many possibilities as was shown by the new growth in the field. Charts and exhibits showed new developments in weed control and in defoliants.

Dr. R. W. Rutledge was faculty adviser and was in charge of the exhibit. He should be congratulated for presenting the science of botany and its possibilities to the public in such an interesting exhibit.



MT. VIEW MILLING CO.

Manufacturers
of
High Grade Feeds

USE OUR PRODUCTS AND HELP
CONSUME LOCAL GRAIN

PHONE 532 SENECA, S. C.



Hours 11:00 a.m. — 12:00 p.m.



DAN'S


For the BEST in
Hamburgers and all
types of Sandwiches

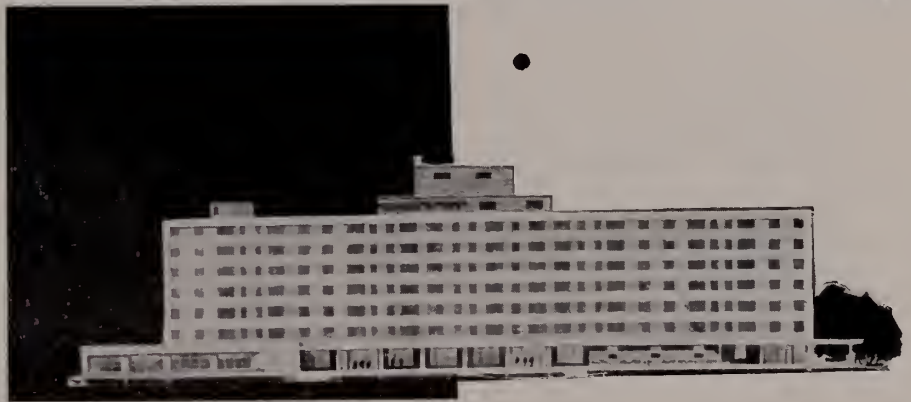
GRASS

Grass is the forgiveness of nature, her constant benediction. Fields trampled with battle, saturated with blood, torn with ruts of cannons, grow green and carnage is forgotten. Streets abandoned by traffic become grass grown like rural lanes and are obliterated. Forests decay, harvests perish, flowers vanish, but grass is immortal.

Its tenacious fibers hold the earth in its place and prevent its soluble components from washing into the wasting sea. It invades the solitude of deserts, climbs the inaccessible slopes and forbidden pinnacles of mountains, modifies climates, and determines the history, character and destiny of nations.

—By Senator John J. Ingalls

One of the best in the South . . . ultra-modern . . . says 



Clemson
 *House*

In the foothills of the beautiful Blue Ridge Mountains, you'll find the Clemson House located in a unique setting — right on the campus of Clemson College. Here you will find all of the services of a great metropolitan hotel yet you will be far away from the noise of a large city. And you'll enjoy the beautifully landscaped grounds and the flower beds. The splendid accommodations and the excellent cuisine offered at the Clemson House are combined with warm friendly hospitality and fine service. The Clemson House is a gem among fine hotels, and the rates are almost unbelievably low. All rooms are air conditioned. Four dining rooms and the Tiger Lounge and Coffee Shop. There is swimming, fishing and golf nearby

FRED L. ZINK, JR., Manager

On East Edge of Clemson, S. C., on U.S. 78, 123 and State 28.



TUXEDO CHICK MASH
Special Offer!

\$1.25
Butcher Knife

Carbon Steel!
Sturdy 8" Blade!
Firmly Riveted, Hard, Rosewood Handle!

Tuxedo Chick Mash makes this offer to reward old customers, and to induce new customers to become acquainted with America's finest chick starting feed. Tuxedo Chick Mash gives chicks a running start, keeps them growing, because it supplies the vitamins, fats, proteins, minerals they need in properly balanced amounts. See your near-by Tuxedo Feeds dealer NOW! This bargain offer is limited!

ONLY 50¢
Plus ingredients tag or list from any Tuxedo Chick Mash bag.



Our 75th Year

THE EARLY & DANIEL COMPANY
CINCINNATI 3, OHIO

TUXEDO Chick Mash

Tuxedo Starting & Growing Allmash
Tuxedo Starter, Grower & Developer Mash

AG. FAIR (continued from page 4)

Two guessing contests were provided for visitors. The Poultry Department gave a dressed turkey to Mr. Harold Cochran of Anderson for guessing the number of grains of corn a rooster ate.

The Agronomy Department gave a half bushel of popcorn to Mrs. R. E.

Batters of Clemson for guessing the amount of cotton seed in a bag of cotton.

The children were not neglected. Mexican burros, complete with saddles, were provided for the youngsters. There was a never ending flow of children to enjoy the free burro rides.

The fair could not have met with such a measure of success without the support of the entire faculty. We are especially grateful to Dr. M. D. Farrar, Dean of Agriculture, Dr. J. W. Jones, Faculty Chairman, Dr. W. B. Boykin, Faculty advisor, and Prof. T. L. Senn, Faculty advisor.

Forestry Exhibit

E. B. Collard, Chairman

This year's theme of the Forestry department was "Glimpses into Various Branches of Forestry." The display of wood and other forest products was arranged on three tables. The first and second tables exhibited the main branch of forestry, the direct products from the forest. They exhibited the most important woods at present. Woods from foreign countries were also displayed. The third table displayed the various secondary products stemming from the branch of wood technology and also exhibited there were the instruments used in forest mensuration. A series of background pictures outlined the various steps in logging engineering. They showed the different operations used from forest to mill. Also displayed were posters on the importance of fire control and examples of wildlife and their influences in the forest.

Dr. K. Lehotsky and the pre-forestry students should be commended for their work on this exhibit.

Woman (opening the door of the refrigerator and finding a rabbit sitting inside): "What are you doing in here?"

Rabbit: "This is a Westinghouse isn't it?"

Woman: "Yes."

Rabbit: "Well, I'm just westin."

As the new barber nicked the one-armed stranger for the second time, he said, "You have been here before?"

"No," said the stranger sadly, "I lost this arm in a sawmill."

Leo: "I saw your car parked on a side road last night. Tire down?"

Joe: "Nope, didn't have to."

The BREEDERS'S GAZETTE

An Index of South Carolina's Outstanding Breeders

ANGUS

A. R. MIMS FARM LYDIA, S. C.
Breeders of Registered Angus
Commercial Steers Pig Hatchery

GUERNSEYS

GIPPY PLANTATION
MONCK'S CORNER, S. C.
Registered Guernseys Since 1929

HATCHERIES

PINELAND RED FARM MAYESVILLE, S. C.
USROP Rhode Island Red Breeding Farm
Certified and Pedigreed Baby Chicks

SOUTHEASTERN HATCHERIES, INC.
P.O. Box 336
LEESVILLE, S. C.

Breeders Desiring Ads in This Gazette Write
THE AGRARIAN Box 2526 CLEMSON, S. C.
Ads \$3.00 per Issue

HEREFORDS

GAY PLANTATION WHITMIRE, S. C.
J. R. Suber, Owner—Registered Horned Herefords
Famous Bridwell Breeding

D. E. EFIRD
Polled Herefords
LEXINGTON, S.C.

Registered Polled Herefords
Excellent Blood Lines — Reasonable Prices
W. H. McLEOD & SON SEABROOK, S. C.

WHITE BROS. HEREFORD FARM
CHESTER, S. C.
Registered Polled & Horned Herefords
J. A. & H. S. White, Owners—Moffett White, Mgr.

THURMAN FARMS
Breeders of Herefords for Nearly 50 Years
CHERAW, S. C.
Phone 7372

ALPHA ZETA—Our National Honorary Ag. Fraternity

Alpha Zeta, the beginning and the end. These letters represent the span, the substance, and all absorbing aim of the organization of the Fraternity of Alpha Zeta. The Fraternity of Alpha Zeta had its beginning at the College of Agriculture of Ohio State University on November 4, 1897. It was founded by C. W. Burkett and John F. Cunningham, who along with 10 other charter members, established the Townsend Chapter at Ohio State University.

This fraternity grew out of the realization of a need for a fellowship among students whose interests lay in the field of Agriculture. Alpha Zeta was not fashioned after the so-called Social Fraternities, nor the Honorary Societies. The men chosen for membership in Alpha Zeta are chosen for their high standing, good scholarship, and for the possession of those traits of character and person-

By Elbridge Wright, Jr.

ality that combine to make a man of outstanding, upright character.

To be eligible for membership in Alpha Zeta, the person has to be enrolled in some technical phase of Agriculture at a college or university which has a chapter of Alpha Zeta. He also must have completed at least one-half academic years of his four year college course and have at that particular time an average of his grades that will place him in the upper two-fifths of his class. As stated heretofore, he must also show traits of leadership and possess certain qualities that show him to be a person of high character.

The chapter of Alpha Zeta in South Carolina is located at Clemson College. This chapter was founded at Clemson on April 19, 1930. This was

the 38th chapter of Alpha Zeta in the United States. There are, now in the United States, a total of forty nine chapters of Alpha Zeta in the various colleges and universities.

The chapter here at Clemson sponsors various projects each year in trying to promote the field of Agriculture. One of the projects is the awarding of a cash prize, each year, to the sophomore majoring in some phase of Agriculture that has the highest grade point ratio. Another, and probably the most important event that Alpha Zeta sponsors, is the biennial student Agricultural Fair. Alpha Zeta serves as the coordinating unit for the fair, as well as helping in many other ways. The members of Alpha Zeta were greatly pleased with this year's Agricultural Fair since it was widely acclaimed as being the most successful

(continued on page 24)

TALL CORN

Old rebel to man about to jump off a cliff:

Rebel: Well, think of your wife and your mother and father.

Jumper: I don't have any.

Rebel: Well, think of your wife and children.

Jumper: I don't have any.

Rebel: Well, think of General Lee.

Jumper: Who is he?

Rebel: Jump, you damn Yankee.—

* * * * *

Housemother: "Why didn't you call me when he wanted to kiss you?"

Girl: "I didn't know you wanted to be kissed."

* * * * *

Stopping at the first house on his famous ride, Paul Revere cried, "Is your husband home?"

"Yes."

"Then tell him to dress and fight the British."

At the second, third and fourth houses he repeated the conversation. Stopping at the fifth house he cried again: "Is your husband home?"

"No."

"Whoa."

* * * * *

A lawyer was attending a funeral. A friend arrived late and took a seat beside him, whispering, "How far has the service gone?"

The lawyer nodded towards the clergyman in the pulpit and replied, "He just opened up the defense."

* * * * *

Farmer Brown had a new mule that he couldn't teach or tame, so he took the animal to a professional mule trainer.

The trainer immediately grabbed a two-by-four and beat the mule unmercifully about the head and along the flanks.

"Stop!" cried Farmer Brown. "Are you trying to kill my mule?"

"Listen, mister," said the mule-trainer. "First thing you got to do in training a mule is to be sure you got its attention."

It was the worst storm on record. Finally the dam burst and a raging torrent forced the townfolks to flee to higher ground. From the hill as they looked down, they noticed a straw hat float slowly downstream for 50 feet or so. Then the hat stopped, turned around and made its way upstream a similar distance. After this performance had been repeated several times, one of the group asked:

"What makes that hat act so darn funny?" And a boy replied:

"Last night I heard Grandpa say that 'come hell or high water' he was going to mow the lawn today."

* * * * *

Mother, putting junior to bed: "Shh — the sandman is coming."

Junior: "Fifty cents and I won't tell Daddy."

* * * * *

Pat, a truck driver, stopped suddenly on the highway. The car behind him crashed into the truck and its owner sued the Irishman.

"Why didn't you hold out your hand?" the judge asked.

"Well," replied Pat, indignantly, "if he couldn't see the truck, how could he see my hand?"

* * * * *

Professor: I won't begin today's lecture until the room settles down.

Voice from the rear: Why not go home and sleep it off.

* * * * *

It seems that there was once a boy named Albert Marshall who after dating a girl for about six times finally got up enough courage to give her a light peck on the cheek.

"Am I the first girl you ever kissed?" she asked.

"Yes" said Albert.

"Well," said the girl, "The other girls haven't missed anything."

* * * * *

If ignorance is bliss, why aren't there more happy engineers?

She: "Don't you wish you were a barefoot boy again?"

He: "Not me lady, I work on a turkey farm."

* * * * *

"That's a pretty good looking car. What's the most you ever got out of it?"

"Nine times in three blocks!"

* * * * *

THESE STUDENTS MADE IT WORK

(continued from page 22)

partmental clubs and instruct them in the theme of the fair and try to get them to spotlight that theme in their exhibits. He also passed down all other information from the "wheels" to the departmental student chairmen.

Morgan is a dairy senior from Bamberg, S. C. His campus honors include High Honors, Phi Kappa Phi, and Who's Who.

ALPHA ZETA

(continued from page 21)

fair ever held at Clemson. The attendance at the recent fair was estimated at approximately 5,000.

Alpha Zeta also is theoretically in charge of the student agricultural publication, **The Agrarian**. **The Agrarian** is the oldest student publication on the Clemson College campus, and is also ranked as one of the best. It has been the tradition in past years for Alpha Zeta to elect from its members the co-editors of **The Agrarian**.

The chapter of Alpha Zeta is probably one of the most active chapters in the United States. At the last Biennial Conclave, this Chapter ranked well up among the most active chapters, and it is our hope that we will some day win the award for the most active chapter of Alpha Zeta.

We, of Alpha Zeta, hope that in some way, through our actions or our character, that we may serve to promote the field that we so firmly believe in. It is our goal to endeavor to make for mankind, through our pursuit of the agricultural field, a better world in which to live.

CASE "130"

*... the Automatic Baler
designed to delight
mechanically minded
farm boys and girls ...*

Every farm youth has a burning desire to tackle the really big field jobs ... be the "boss" on a corn picker, combine or baler. But—it seems that Dad usually takes over where these machines are concerned. And—he's right in doing so ... unless there's a machine for the job that requires no extra strength to operate ... no intricate adjustments or years of experience ... yet delivers the crop in its finest form, whether that be husked ear corn, clean grain or neat, square bales.

Typical of just such a machine is the new low-cost, farm-size Case "130" Baler. Its simple construction and automatic operation require no effort, practically no skill. Yet, it makes smooth, sliced, twine-tied 14 x 18-inch bales just right in density for easy handling, storage and feeding. See your Case dealer about the modern, amazing Case "130" ... the big-tonnage, wire or twine-tie "140" ... and other hay machinery.



Coming...daringly different 3-plow



Heart-warmingly new from hood to hitch, the Case "300" Tractor will thrill you at first sight with its beauty and design ... performance that any operator can point to with pride ... power, speed and handling qualities and conveniences never before built into a 3-plow tractor. Keep in touch with your Case dealer ... wait for the surprise that's in store when you see the Case "300" ... the tractor that's as modern as the ideas of farm youth. J. I. Case Co., Racine, Wis.

CASE "300"

Flavor above all—that's

Winston!



WINSTON is the cigarette selected by Capital Airlines to serve passengers aboard the new Viscount.

WINSTON changed America's mind about filter smoking! This cigarette gives you real tobacco flavor — the full, rich flavor real smokers want. You know what they say: "Winston tastes good — like a cigarette should!"

Winston also brings you an exclusive filter that really does the job. It filters so effectively that the flavor really comes through to you — smoothly and easily. Have fun — have a Winston!

R. J. REYNOLDS TOBACCO CO., WINSTON-SALEM, N. C.

WINSTON
TASTES GOOD-

LIKE A
CIGARETTE
SHOULD !

Smoke **WINSTON**
the easy-drawing filter cigarette!

6
7573
AGRICULTURAL REFERENCE DEPARTMENT
CLEMSON COLLEGE LIBRARY

The Agrarian

OFFICIAL STUDENT PUBLICATION

CLEMSON, S. C.

THE CLEMSON A & M COLLEGE

MARCH 1956



VOLUME XV

NUMBER 3

Clemson College Library
Clemson, S. C.

BULK RATE — U. S. POSTAGE PAID
PERMIT NO. 4 — CLEMSON, S. C.

SERVING THE FARMERS
IN NORTH AND SOUTH
CAROLINA SINCE 1906



Planters
Fertilizer & Phosphate Co.

CHARLESTON, S. C.

CHARLOTTE, N. C.

THE AGRARIAN

Volume XV

The Clemson Agricultural College

Number 3

Donald B. Anthony
Co-Editor

Richard F. Elliott
Associate Editor

Elbridge J. Wright
Co-Editor

James W. Wright
Advertising Manager

Thomas E. Hayden, Jr.
Business Manager

Dick Fitchett
Circulation Manager

Watt E. Smith ----- Feature Editor Jack C. Langston ---- News Editor
Bill DuBose ----- Dept. Editor Charles Taylor ---- Asst. News Ed.

Departmental Writers—

Watt E. Smith II, Louis Jordan, David A. Bruckner, Jack C. Langston,
Richard F. Elliott, Thomas E. Hayden, Carol E. Brown, D. D. Lee, E. C.
Collard.

Advertising Staff—

James W. Wright, Carol E. Brown, O. R. Bishop, and Emory Bishop.

Circulation Staff—

Dick Fitchett, George Clarke, and Emory Bishop.

Advisory Staff—

B. E. Goodale and T. L. Senn, faculty advisers.
Ray Buck, student adviser.

IN THIS ISSUE

Your Tobacco Plant Bed	Page 3
Peach Pest Control in South Carolina	Page 4
Traditions Advance with Progress	7
Between the Furrows	Page 10
The Men Who Guide Us	Page 15

THE COVER: The cover picture for this issue shows a tobacco harvester in operation. This machine is one of the first advances toward mechanization of this crop. Tobacco is one of the most important crops in the lower part of the state.

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education, and sponsored by the South Carolina chapter of Alpha Zeta. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

AGRARIAN PHILOSOPHY

E. J. Wright, Jr.
R. M. Buck, Jr.

All around us we hear the rumblings of the people of the South — the people who are of the lineage of Lee, Jackson, Wade Hampton, John C. Calhoun, and other great Southerners, the people who have fought, died, and risen again because of the courage given them through their beliefs.

We, of the South, are not hot headed upstarts, as many of the people of this country would have others believe, but are people that have the firm conviction in a way of life that has been so much a part of us that we look on it as sacred.

We in the South have been faced with social, political, and economic problems in the past, but not in the last 90 years have we been faced with a problem of such impact as the one created May 17, 1954. The problem is larger than who goes to school with whom. It is more than a fad or mass hysteria. It brings us face to face with a question that is yet unanswered. Is the right of the Southern States, or any other state, to deal with its own people in internal problems which touch on the customs, morals, and the very culture of these people going to be denied?

We cannot answer this question; we can only pray that we can stand, united against the outside forces that attempt to divide us. We are not sure of the enemy we fight because we do not know the force that sends its legion of lawyers, editors, and rabble rousers.

Our beliefs are being attacked on many fronts. Our enemies come in the guises of social reforms, religious codes, and political pressures.

We must stand firm and unfaltering and in so doing we know that our fathers before us stand with us.

W. B. Camp & Sons, Inc.

Bakersfield, California
and
Gaffney, South Carolina

Buckfield Plantation

Yemassee, South Carolina

Wigington Auto Parts Co.

Wholesale Distributor

AUTOMOTIVE

PARTS—

That bear the NAPA SEAL OF QUALITY

SUPPLIES—

Shop Equipment

Welding

Paint

Fractional Horsepower

MACHINE SHOP SERVICE—

Automotive

Shop Equipment

Fractional Horsepower

SENECA, S. C. PHONE 382

TERRY BOTTLING CO.

Bottler of

**Pepsi-Cola — Toms
Seven-Up**

ANDERSON

and

GREENVILLE, S. C.

Your Tobacco Plant Bed

By Carol Brown, Agronomy '57

One thing that every tobacco grower is more concerned with is his tobacco bed; for without plants he cannot produce a crop. In the following article I have tried to take up a few of the factors which should be considered in the production of tobacco plants.

One of the most important factors in selecting a location for your tobacco plant bed is the soil. Beds are located on many types of soil, but the best seems to be the leaf mold soils found in the woods. The desired characteristics are that the soil should have a high organic matter content, should not become waterlogged, and the top two inches should never bake or become hard and should be relatively free from weeds and disease. If a soil is selected that does not have much organic matter, it can be corrected by adding well rotted manure or by growing and turning under legumes. Clay soils will grow plants under good conditions but the internal drainage is poor and if left undisturbed tend to become hard. Sandy soils are subject to rapid leaching and may require more water than clay soils.

The location selected should be exposed to full sunlight because shading slows down growth and makes the plants more susceptible to blue mold. Trees should be situated on the north and northwest to afford protection from cold winds, but if any trees cast shadows on the bed they should be removed.

Moisture is also a factor of prime importance. Plants should be located where a liberal amount of water can be obtained in case of a long dry spell. Water from streams and ditches should not be used because they may contain disease. Any excess water should be removed from the bed or it will keep the soil air out and cause the roots to rot and the plant to turn yellow and die because it cannot secure nutrients. The excessive moisture may also cause the growth of a fungus which causes "damping off."

The shape, size, and type of bed also plays an important part. Narrow beds are more desirable because



Results of healthy plants from carefully prepared beds.

the plants are more easily reached to be dusted, and for the removal of weeds. The most popular beds are about four feet wide and about 25 yards long. The frames around the bed usually consist of boards held on edge by stakes or pine logs. The disadvantage of the logs is that the rough bark may tear the cover. If the bed is over three yards wide, it is necessary to have some sort of support in the middle to hold the cover up. Most of the beds have glass bottles which have been inverted and pushed into the soil. Some people use a mound of earth around the bed instead of poles or boards. This is satisfactory, but is not as popular as the other methods. The straw bed is one which seems to be gaining in popularity. Some type of straw is placed over the bed in a thin coat and the cloth is then placed over the straw and anchored around the edges. The advantages of this type of bed are the cheaper construction, and the warmth and retainment of moisture afforded by the straw. Pine straw which is reasonably clean is the best.

The soil in the bed area should be cleared of all debris and plowed to

a depth of eight inches. If the top is plowed deeper than this, it will be turned under and the subsoil will be on top. After plowing, the bed is usually harrowed to break up all clods of dirt. Now the bed should be shaped so that it is slightly higher in the middle and sloping toward the edge to improve drainage.

The selection and clearing of a new site for a tobacco bed was necessary a few years ago due to weed seeds, diseases, and insects. This is no longer necessary because of the new chemicals which have been developed to sterilize the soil. The two most effective ways of sterilizing the soil are by burning or using these new chemicals. Burning has been used for many years, but it only kills weed seed and does not affect any diseases or insects which may be present. If the bed is going to be burned, the fertilizer should be applied first and then about four or five feet of cotton stalks which have been packed down. The soil should not be disturbed after burning except to rake it over lightly and then plant the seed. The chemicals most commonly used are methyl bromide,

(continued on page 20)

Peach Pest Control in S. C.

By T. E. Hayden, Jr., A.H. '56

There are four main areas of peach production in South Carolina. In 1950, 81% of the state's orchards were in the Piedmont, 9% in the Ridge area, 7% in the Sandhills, and 3% in the Upper Coastal Plain. Spartanburg is the leading peach county with about 60% of the total commercial trees. Using 1954 figures, which are fairly representative, peaches provided the third largest income of field crops and fruit and nut crops combined. Peaches brought in 4% of the total crop dollars, which seem small, but it must be remembered that the orchards are localized and not as widespread as cotton and tobacco, the two crops which exceed it in value.

Having this bit of information about peaches, peach pest control can now be more fully appreciated. There are two types of pests of peaches. These are insect pests and diseases. Frost may be considered as a pest, but since there is little that the grower can do to prevent loss by frost, this article will be confined to insects and diseases.

The plum curculio is a constant threat to the peach grower. Parathion has given excellent control of the plum curculio under orchard conditions. The parathion may be



Tractor drawn "speed sprayer" — a common type of sprayer used in Piedmont South Carolina.

—Courtesy of Extension Service

applied either as a dust or as a spray. One thing must be remembered about parathion though, IT IS EXTREMELY DANGEROUS to humans and livestock unless precautions are observed. The jarring sheet is often used to get an indication of the relative numbers of the curculios throughout the orchard. Begin jar-

ring when the average daily temperature is about 55° for several days.

The oriental fruit moth is not a serious pest in South Carolina except on scattered locations. Vigilance should still be given to detect any however, and all varieties ripening in late July and August should be sprayed. Two pounds of wettable DDT to 100 gallons of water 3-5 weeks before ripening has given good control. Growers who are using parathion will not need to make this application.

There are three types of scale insects which are found in South Carolina: San Jose scale and Forbes scale are very similar and may be controlled by dormant oils or liquid lime sulfur. The white peach scale requires two applications of a dormant spray two weeks apart. San Jose scale has given the most trouble in South Carolina. Growers using parathion will find that it helps control scale. If after checking no scale is present, the dormant spray may be omitted.

Plant bugs sometimes injure small peaches causing cat-faced and deformed fruit. These bugs include the

(continued on page 7)



Airplane duster — an effective means of controlling disease

—Courtesy of Mr. R. J. Ferree

"It's the Kind of Implement That Makes a Customer a 'Friend'..."



AND this John Deere "LF" Lime and Fertilizer Distributor makes friends because—when purchased for farm use—it's not just an item of expense, *it's an investment*. It's a wise investment and a necessary one for almost any farm's soil conservation program.

In today's farming, the Lime and Fertilizer Distributor is as important as the manure spreader, or the crop rotation, or terracing.

Actually, this "Propel-R-Feed" Distributor is a new machine—new to meet the needs of the new modern farmer.

And this new machine is representative of the ever-modern John Deere line of quality farm equipment—the kind of equipment that does a job right and benefits its owner by enriching the soil, producing bigger yields, and saving time and money.

Farm equipment that will do all this will make *any customer a friend*.



Farmers everywhere are finding the John Deere "Propel-R-Feed" Distributor the ideal machine for liming and fertilizing pastures, hayfields, and prepared seedbeds; seeding small grain; and making a one-operation job of fertilizing and planting all kinds of legumes and grasses.



JOHN DEERE • Moline, Illinois

QUALITY FARM EQUIPMENT SINCE 1837

Etiwan Fertilizer Co.

CHARLESTON, SOUTH CAROLINA



Independent - Prompt - Reliable



— Manufacturers Of —

DEPENDABLE FERTILIZERS SINCE 1868

LEE'S Amoco Service Station



Most Modern Station in Clemson

CLEAN REST ROOMS

Honoring Courtesy Cards of
All major Oil Companies



Telephone 6696

**52 YEARS OF SERVICE
TO SOUTHERN AGRICULTURE**



**"The South's Foremost
Seed Breeders"**

**COKER'S PEDIGREED
SEED CO.**

HARTSVILLE S. C.



Write for Catalog and Prices

Traditions Advance With Progress

By Dixon D. Lee, Dairy '57

A time honored tradition of Clemson that has disappeared due to progress is the one that "rats" participated in during the first months of their stay at Clemson. In the older days, as remembered by every alumnus, the word was passed by the upperclassmen that the creamery's ice cream machines had "broken down" and that ice cream was going to waste. The freshmen, gathering pitchers, trash baskets, and every available container, ran like rabbits to the old Dairy Building for their share of the ice cream. The old creamery has now been replaced and there is no excuse for the ice cream freezers to be "broken down."

Clemson now has a modern Dairy Industry Laboratory for processing all its milk, ice cream, and other dairy products. This laboratory is located in the Food Industries Building, which was recently completed under the Agricultural Building Program. The "plant," as it is affectionately called by the dairy students, is a large wing consisting of three sections which lie lengthwise of the building. The outer section consists of the blue cheese processing room, cold storage rooms and the bottle washing room. The center section consists of the large processing room where all the dairy products are processed. The section next to the remainder of the Food Industry Building is for dry storage. A quality control laboratory is also located in this section.

To trace the "flow" of the plant one must always begin with the basic material, milk. Milk produced at the college dairy is brought to the plant in a 1500 gallon tank truck. The truck is driven up a ramp at the rear of the building, and a stainless steel sanitary pipe is connected to it and to a positive blow milk pump. Sanitary piping is used throughout the plant for conveying milk. The milk is pumped from the tanker through a clarifier into one of the two 1000 gallon refrigerated storage tanks. When milk is to be processed, milk flows by gravity to a supply tank from which it is pumped through a special type high temperature, short time pasteurizer —

only one at any college—to get rid of odors and to destroy bacteria. From the pasteurizer the milk is pumped into a homogenizer where it is homogenized and then pumped to a plate cooler to be cooled.

The milk, now being ready for bottling, is pumped through stainless steel piping to the bottle filler. Automatically cleaned, sterilized bottles are filled with the processed milk. The filled bottles pass on to the capping machine, and finally by conveyor the milk is passed into the milk storage room.

When ice cream is processed the milk is pumped into a 200 gallon vat pasteurizer and the other necessary constituents are added. The ingredients are thoroughly mixed, pasteurized and then pumped through the homogenizer, a plate cooler, and then into a refrigerated mix storage tank for holding.

After proper aging the mix is flavored and frozen into ice cream by either of two models of continuous ice cream freezers. The ice cream is packaged directly from the freezers into pint, quart, or 3-gallon containers. The packaged product is conveyed into a -20°F . hardening room for final freezing and storage.

Forward of ice cream freezers is the butter processing area where a stainless steel churn is located for the churning and processing of butter made at Clemson.

A cleaning-in-place system is used to clean and sterilize all stainless steel sanitary pipe in the plant. To save taking down all the pipe, this system is used and involves the running of chlorine solutions as a detergent, followed by very hot water as a rinse solution.

In the southwest corner of the building is the blue cheese processing room. Milk for cheese making is pumped from the milk storage tanks through stainless steel sanitary pipe lines to the cheese vats. Curd made from the milk is inoculated with blue mold, cured, and processed into blue cheese. After aging, the cheeses are wrapped as wedges and rounds. The blue cheese room is isolated from the rest of the plant to prevent contami-

nation of other dairy products by blue mold.

A platform is around the outside of the dairy plant and is used for the loading and unloading of dairy products and supplies. Conveyors run from the platform into various rooms inside the plant. Steam and cold water connections are located on the platform for washing and rinsing purposes.

Our dairy plant, as modern as can be found in the South, has been in operation since November 1955. We dairy students are proud of our new quarters which gives us the benefits and opportunities of learning our chosen profession through use of the latest and most modern equipment and facilities. In addition to the student's work, a program of research is underway for the continued development and advancement of the great Dairy industry of today.

PEACH PESTS

(continued from page 4)

black peach aphid, mites, red spiders, and the corn earworm. These insects are especially found on heavier soils and where legume cover crops are used, DDT should be applied. The corn earworm causes the most damage in orchards with a vetch or Austrian winter pea cover crop. Disking the cover crop under will help to control the corn earworm as well as spraying or dusting to control them.

Borers may soon be the biggest pest of the peach industry in the Southeast. South Carolina has three types of borers: the peach tree borer, the lesser peach tree borer and the shot-hole borer. The peach tree borer is a creamy to pale-yellowish caterpillar which bores into the trunk at or just below the ground surface. Ethylene dichloride emulsion or paradichlorobenzene (PDB) crystals have been recommended for the control of this pest, however, spraying the trunks of the trees with DDT or some other organic insecticide has given good results in some sections of the country. Ethylene dichloride emulsion may be used in lieu of (continued on page 8)

PEACH PESTS

(continued from page 7)

the crystals and is safe to use. It is slightly more expensive, but saves labor. Ethylene dichloride is more volatile at lower temperatures and can be used later in the season, up to early November.

Dosage: The strengths of the emulsions vary according to the individual manufacturer. It is essential to follow the manufacturer's directions in diluting it. Be sure that the stock emulsion is stirred or shaken thoroughly before removing it from its container.

Method of application: Keep it constantly stirred as it is being used. It should be applied in a small trench dug around the base of the tree. After treating, place several shovelfuls of soil in a mound against the tree. The mounds should be torn down after 4 to 6 weeks unless it is cold, then they may remain longer. In all cases, tear the mounds down by June 15 to prevent the female moths from laying eggs high on the trunks and making subsequent treatment difficult.

PDB crystals sold specifically for peach tree borer control should be the ones used if the individual prefers to use the crystals. Fall treatments are more effective than spring treatments — October being the best month.

Dosage: On 6-year-old trees and older apply 1-1½ oz. PDB per tree. On younger trees from ½ - ¾ oz. PDB is not recommended for 1 and 2-year-old trees.

Method of application: Remove the excess gum, clear away any weeds and trash for a distance of a foot away from the tree. Loosen the soil and level it, distribute PDB in a narrow continuous band about two inches from the trunk. Place several shovelfuls of soil over the band of PDB crystals, being careful not to knock them up to the trunk, then compact the earth into a cone shaped mound with the back of the shovel. Remove mounds in 3-6 weeks after treatment, the shorter time for younger trees. Since care must be taken when building the mound up on the crystals, the emulsion method will probably save labor.

Trunk sprays: Effective control of the peach tree borer has been obtained by spraying the tree trunk with DDT or parathion. Thoroughness of coverage is essential for borer control. Growers using parathion in

their regular spray program should spray the trunks and scaffold limbs each time they spray. This practice will help in controlling the few borers which emerge early in the season and particularly the lesser peach tree borer.

The lesser peach tree borer commonly occurs in wounds and cankered areas on the trunks and branches, although they are not the cause of these cankers. Partial control of this borer may be obtained by keeping the tree as free as possible from these cankers, wounds, and winter injury. Some methods in doing this are: 1) Prune during the dormant period. 2) Practice close pruning and avoid stubs. 3) Cut out all dead wood at pruning time. 4) Cankers and wounds on the tree should be cleaned in the winter with a non-injurious asphalt or commercial pruning preparation, or with white lead paste made with a small quantity of boiled linseed oil. Never use turpentine. If the trunks are sprayed with parathion during the other sprays, the grower will have less trouble with the lesser peach tree borer.

Shothole borer: This borer usually attacks dead or weakened trunks and branches of all fruit trees, but may be found on healthy trees. The best control method is to remove all dead wood from the trees. Vigor of the remaining trees may be improved by heavy application of nitrogen, proper drainage, and effective scale control. The oil emulsion treatment is moderately effective in controlling the shot-hole borer.

Most diseases of peaches are fungus organisms. Leaf curl is a fungus which infects young foliage and fruits during the spring. Infected leaves appear thick and are distorted. Infected fruits are often irregular and knobby in shape. Such peaches often drop prematurely. Leaf curl is of economic importance only in the Piedmont. Piedmont growers should apply a leaf curl spray each season. Lime-sulfur or bordeaux spray may be used to gain control of this fungus.

Peach scab overwinters in shallow twig lesions. The first spores appear shortly after petal fall and continue during the growing season. Disease symptoms appear on leaves, young twigs and fruit. On the fruits, scab-like lesions develop, but are only skin deep. Wettable sulfur applied according to the spray schedule will control the scab.

The most important peach disease in South Carolina is brown rot. Brown rot is probably of more importance in the Piedmont section. The fungus overwinters in fruit mummies lying on the ground or hanging in the tree. These mummies produce spores at blossom time. In infested orchards, sprays should be applied at 2-3 day intervals during the blossoming period. During the summer, the rot infects immature fruits. By harvest time, a high percentage of the fruits may be infected. Control measures include the removal of all rotted fruits, mummies and buttons following the harvest and spraying during blossoming with a wettable sulfur spray or dust. Spraying or dusting should also be done during harvest if the season is rainy.

Rhizopus rot is caused by a fungus parasite often known as bread mold. Although the disease is detected in the orchard, the damage occurs during transit and storage. This rot appears as a raised black mold with little black spore balls. Sanitary conditions around packing sheds are important in controlling this fungus.

Peach anthracnose or "bitter rot" is caused by a fungus which starts to rot the fruit as it starts to mature or while enroute to market. The disease is first seen as a small brown rot which enlarges slowly. The center of the spot becomes sunken, and rings of spores appear. This disease has been found most severe where blue lupine is planted as a cover crop or when planted near orchards. Two pounds captan per 100 gallons water in preharvest sprays seems to control it. The captan spray is also helpful in controlling brown rot and may elicit control of these two fungi simultaneously.

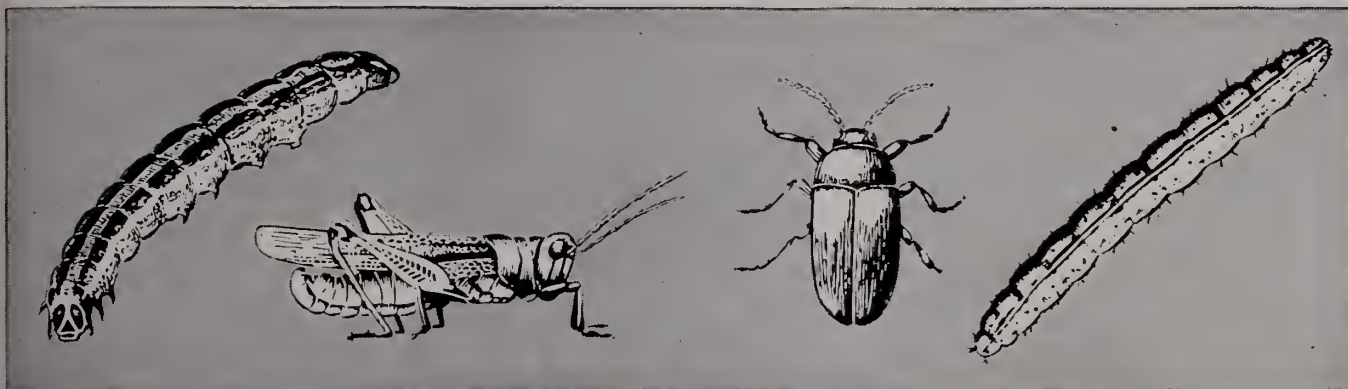
Bacteriosis or bacterial spot is most severe in the Sandhill and Ridge areas. This disease is caused by a bacteria which overwinters in twig lesions. The disease may occur on foliage, fruit and young twigs, and is spread chiefly by wind-blown rain. The fruits appear with black spots on the skin, which if over ¾ square inch cause an otherwise No. 1 to be a No. 2. The regular spray program and all other fungicides tested in South Carolina have resulted in poor control of this disease. Zinc sulfate and hydrated spray lime applied at 5- to 7-day intervals may provide control.

(continued on page 12)

TOXAPHENE IS RECOMMENDED FOR



EFFECTIVE, ECONOMICAL CONTROL



OF MORE THAN 200 INSECT PESTS



HERCULES POWDER COMPANY

INCORPORATED

Agricultural Chemicals Division, Naval Stores Department • 920 Market St., Wilmington 99, Del.

NX56-1



BETWEEN

Sowed 1

DAIRY NEWS

Ernest L. Corley, Dairy '49, was a visitor at Clemson in the latter part of February. Professor Corley is a teacher and research worker on the Dairy Husbandry staff at the University of Wisconsin Madison, Wisconsin. He is scheduled to receive his doctorate degree at the University of Wisconsin in June.

John E Wessinger, Dairy '50, is a dental student at the Dental College at the University of Virginia.

Benjamin S. Wiggins, Dairy '56, and former Agrarian staff member, is now employed by the Edisto Farms Dairy, Columbia, S. C. Benny is to be married on March 17, 1956. He is awaiting his orders to report to the Air Force for pilot training.

Two dairy graduates of the class of 1953 are candidates for their Masters Degree in Dairy Industry here at Clemson. They are William R. Bellamy and Wayne Williams.

A recent visitor here at the Clemson Dairy Department was Mr. James H. Boulware, Dairy '32. He is Agricultural Attache at the American Em-

bassy at Canberra, Australia. Mr. Boulware has been in foreign agricultural work since World War II.

BLOCK AND BRIDLE CLUB TO PRESENT BARBECUE

The Block and Bridle Club, whose plans have largely been defeated by circumstances this year, swung into action at the first meeting this semester as it planned a barbecue for the Block C Intra-squad Game on the 10th of March. Committees have been appointed and from the looks of things this should be one of the biggest and best barbecues the club has ever sponsored.

A contest has been initiated between club members to see who can bring in the largest number of new members this semester. New members will be initiated formally at the "y" cabin in the near future. Any agriculture major who is genuinely interested in animal industry is eligible for membership in the club.

VAN LOTT, Inc.

430 Meeting St.

West Columbia, S. C.

Distributors of

IRRIGATION EQUIPMENT

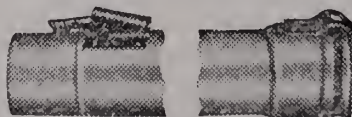
WEBSTER PIPE

JAEGER PUMPS

RAIN BIRD SPRINKLERS

BERKELEY PUMPS

G. M. DIESELS



WEBSTER PIPE CONNECTIONS



AGRONOMY NEWS

Dr. Gilbeart H. Collings, Head of the Clemson Agronomy Department has just signed a contract with a publishing house in Barcelona, Spain, for the translation into Spanish and the publication of his 5th Edition of **Commercial Fertilizers**. These books are designed for the Spanish market in Spain and South America.

Dr. W. B. Boykin has been appointed State Representative of the South Carolina Experiment Station to represent the station with all soil cooperative projects between the South Carolina Experiment Station and Federal agencies.

Dr. W. P. Byrd of Ohio State University is being employed by the Agronomy Department as small grains breeder. He will begin work here on April 1, 1956.

Dr. D. D. Hill, Head of the Department of Farm Crops, Oregon State College, addressed the Agronomy Club and staff members on February 14. He also showed picturesque slides of the Pacific Northeast.

LAZAR AND WHEELER JOIN AZ

Alpha Zeta is proud to announce that two faculty members. Dr. Richard Wheeler of the Animal Husbandry department and Dr. J. T. Lazar of the Dairy department, have been accepted by the national office as associate members.

Alpha Zeta held its first meeting of the second semester on February 14. The chief item of business was the taking in of new members which will take place in the near future.

Watt E. Smith, the chapter's delegate to the national biennial conclave in the fall of 1954, gave a short report on his activities for the benefit of boys who may be interested in going to the conclave next September. The delegate will be elected soon after new members are initiated.

The fraternity will again offer a \$25 scholarship to the outstanding freshman in Agriculture. This award will be presented on Honor Day this spring.

Big Oak Ranch

BRAHMA — HEREFORD — ANGUS

CROSSES

and

Registered BRAHMAS and HEREFORDS

Importers and Breeders of Mexican Burros

Mount Pleasant, S. C.

Ray M. Buck, Owner

The BREEDERS' GAZETTE

An Index of South Carolina's Outstanding Breeders

ANGUS

A. R. MIMS FARM LYDIA, S. C.
Breeders of Registered Angus
Commercial Steers Pig Hatchery

GUERNSEYS

GIPPY PLANTATION
MONCK'S CORNER, S. C.
Registered Guernseys Since 1929

HATCHERIES

PINELAND RED FARM MAYESVILLE, S. C.
USROP Rhode Island Red Breeding Farm
Certified and Pedigreed Baby Chicks

SOUTHEASTERN HATCHERIES, INC.
P.O. Box 336
LEESVILLE, S. C.

HANKS HATCHERY & TURKEY FARM
Breeders of Broad Breasted Bronze
S. H. Hanks, Rt. 3 Anderson, S. C.

HEREFORDS

GAY PLANTATION WHITMIRE, S. C.
J. R. Suber, Owner—Registered Horned Herefords
Famous Bridwell Breeding

D. E. EFIRD
Polled Herefords
LEXINGTON, S.C.

Registered Polled Herefords
Excellend Blood Lines — Reasonable Prices
W. H. McLEOD & SON SEABROOK, S. C.

WHITE BROS. HEREFORD FARM
CHESTER, S. C.
Registered Polled & Horned Herefords
J. A. & H. S. White, Owners—Moffett White, Mgr.

THURMAN FARMS
CHERAW, S. C.
Breeders of Herefords for Nearly 50 Years
Phone 7372

Breeders desiring Ads in this Gazette write THE AGRARIAN, Box 2526, Clemson, S. C. Ads \$3.00 per issue.

PEACH PESTS

(continued from page 8)

A threatening disease to South Carolina growers is the phony disease. Caused by a virus, infected trees have abnormally dark green leaves, terminal twig growth is stunted and the fruit is greatly reduced in size and quantity. This disease is present also in wild plums, but is symptomless in this host. Phony disease occurs in all peach growing areas of the state and has caused serious damage in some localities. Control measures include: 1) Remove all infected trees as soon as detected. 2) DESTROY ALL WILD PLUMS WITHIN 300 YARDS OF PEACH ORCHARDS. Wild plums may be killed by spraying them with Ammate weed killer, rate, 1 pound per gallon of water. Spray equipment should be carefully cleaned after using this material.

Root knot or nematode is caused

by round worms which penetrate the feeding roots of young trees, causing an early death of infected trees. Symptoms are "galls" on the root about matchhead size. Nematode infestation has been frequently observed in the Sandhill areas. Root knot resistant stock is the control measure being used to combat this nematode. Shalil, Yunnan and S-37 are the three principle stocks being used in South Carolina. All of these stocks are susceptible to certain kinds of nematodes, but S-37 has given the best results.

Crown gall is a soil-borne bacteria disease which occurs on a wide range of hosts including the stone, pome and bush fruits. Infestation may occur at any time during the growing season. The bacteria overwinters in living tissues of galls or free in the soil. Drainage water is an important means of spreading the bacteria. Control measures include: 1) Obtain

and plant only inspected, disease free stock in soil. 2) Remove and burn diseased roots and stumps. 3) Do not reset trees in an infected orchard. 4) Infected orchard sites should be planted to small grain or row crops for 5-6 years before resetting another orchard.

Host introducing man to woman wearing a strapless gown: "This is Professor Shefertz authoring on structural engineering. He wants to ask you something."

* * * * *

"What happened to your finger?"
"Oh, I was downtown yesterday getting some cigarettes and some clumsy fool stepped on my hand."

* * * * *

He: Did anyone ever tell you that you have beautiful eyes?"

She: "Not while looking where you are."

Say Good-bye to Down-Shifting

every few minutes...

10 SPEEDS
FORWARD—
2 REVERSE

Torque Amplifier saved 565 shifts or slow-downs in 167 hours of Farmall plowing... one every 17½ minutes! That's the tally of an ag college study. Try TA! See how much time it can save for you.



Keep going with **TORQUE AMPLIFIER** on a **McCORMICK® FARMALL® 300 or 400 tractor**

Just pull the Torque Amplifier lever! . . . forget constant, aggravating down-shifting . . . step up plowing as much as 10 to 15% daily! You gain rounds, save fuel with two speeds in each gear—10 forward and 2 reverse!

Change speed *instantly* to match power to the load—use TA *all day long* when needed. With Torque Amplifier and *completely* independent pto you can change tractor speed *on-the-go*, keep pto speed constant!



Farmall Fast Hitch lets you Back . . . **CLICK!** . . . and Go to hitch or switch implements seconds-fast. You save your back . . . speed your farming . . . do top-quality work . . . reduce implement costs.



Farmall Hydra-Touch operates up to three double-acting hydraulic cylinders—one at a time or all together. It gives you the most useful hydraulic implement control ever available in the big tractor field!



Ask your IH dealer to demonstrate exclusive Torque Amplifier on McCormick Farmall and International 300 and 400 Series tractors! Let your Farmall pay for itself in use under the IH Income Purchase Plan of Buying.

INTERNATIONAL HARVESTER

International Harvester products pay for themselves in use—McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Crawler and Utility Tractors and Power Units—General Office, Chicago 1, Ill.



Send for
**FREE
Catalog**

International Harvester Company
P. O. Box 7333, Dept. CP-3, Chicago 80, Ill.

Send catalog describing the money-making Farmall I've checked below:

- | | | |
|--|--|--|
| <input type="checkbox"/> Farmall 400
(4-plow) | <input type="checkbox"/> Farmall 300
(3-plow) | <input type="checkbox"/> Farmall 200
(2-plow) |
| <input type="checkbox"/> Farmall 100
(1-2 plow) | <input type="checkbox"/> Farmall Cub
(1-plow) | |

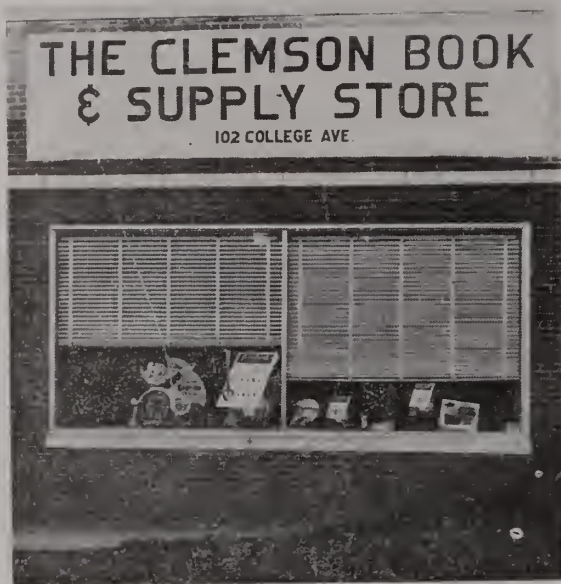
Name _____ ☐ Student

Address _____

Post Office _____ State _____

I farm _____ acres. Principal crops _____

My IH dealer is _____



THE CLEMSON BOOK STORE
Official College Book & Supply Store

NEW IN APPEARANCE,
OLD IN FRIENDLINESS!!!
WE ARE ALWAYS GLAD
TO WELCOME YOU
BACK TO THE CAMPUS.

L. C. MARTIN DRUG COMPANY
Serving Clemson Men Since 1903



A farmer visited his son at U.S.C. Watching students in a chemistry class he was told they were looking for a universal solvent.

"What's that?" asked the farmer.

"A liquid that will dissolve anything."

"That's a great idea," agreed the farmer. "When you find it, what are you going to keep it in?"

Husband: "The iceman's been bragging that he's kissed every woman in this apartment house, except one."

Wife: "Must be that snooty Mrs. Jones upstairs."

* * * * *

"That's a hot number," said the steer, as the glowing brand was pressed against his tender flank.

Ray—"Do you think I should put more fire in my editorials?"

Don—"No—vice versa!"

* * * * *

Mary Ann: "What's your opinion of my boyfriend?"

Betty Ann: "He'd be a bigger success if he had more horsepower and less exhaust."

The Men Who Guide Us

By Watt E. Smith II



MILTON D. FARRAR

Doctor Farrar, who is the Dean of the School of Agriculture, graduated from Iowa State College at Ames, Iowa, in 1925 with a Bachelor of Science degree. In 1927 he received his Master of Science degree from South Dakota State College. Further study at Iowa State College gave him his Doctor of Philosophy degree in 1932. He has done some additional work at the University of Illinois.

His professional career began at the University of Illinois where he remained for eighteen years. The following three years found him working at the University of New Hampshire. He left the University of New Hampshire for Clemson College in 1949. At Clemson he started as Head of the Department of Entomology and Zoology. In 1953 he was made our Dean of Agriculture, the position he now holds.

The accomplishments of Doctor Farrar are noteworthy. Here are only

three. He developed the vacuum bell-jar technique for testing insecticides. A granular type of insecticide was developed by him, and this type of insecticide is being used throughout the world today. It was developed between 1950 and 1952. He has had published about 80 papers on entomology and zoology.

His hobbies include gardening (particularly for ornamentation), reforestation, wildlife, and anything to do with the out-of-doors.

Doctor Farrar was married in 1925. He and his wife have three children—the only girl is now married, the older son is working for his Master's degree in Music, and the other son is a sophomore at Daniel High School.

He was one of the second class of ROTC officers and was a Reserve Officer for a number of years.

Recently, he was the agricultural representative on the committee which built the new Agricultural Center here at Clemson.



BEN E. GOODALE

Mr. Goodale whose present title is Professor of Dairying is a native of Marshalltown, Iowa. He was a farm boy in his youth. He graduated from Iowa State College in Ames, Iowa in 1922 with a Bachelor of Science degree and further study there gave him a Master of Science degree in 1929.

In 1922 when he came to Clemson, he was in charge of Dairy Manufactures Teaching, and as a sideline was head freshman football coach. He was head freshman coach for three years and then became varsity line coach for seven more years. For 11 years he was a member of the Southern Football Officials Association.

Mr. Goodale is a member of the following fraternities on the campus: Blue Key, Alpha Zeta, Phi Eta Sigma, Mu Beta Psi, and Tiger Brotherhood. He is the faculty advisor for Phi Eta Sigma, the Presbyterian Stu-

(continued on page 18)



WILLIAM J. GOODWIN

Dr. Goodwin, who came to Clemson in 1953, is an Associate Entomologist and and Associate Professor of Entomology. He received his Bachelor of Science degree from Oklahoma

A & M College in 1950. In 1951, he received his Master of Science degree and in 1953, his Doctor of Philosophy degree, both from Cornell University.

Dr. Goodwin has done research in the field of veterinary entomology. A self-rubbing device for the con-

trol of flies and lice on cattle has been investigated by him, and this device is made from just barbed wire, burlap bags, and three small posts. Also he has done research on the control of houseflies, cattle grubs, hog lice, cattle lice, and biting flies.

Dr. Goodwin is a member of Alpha Zeta, Phi Kappa Phi, Phi Sigma Biological Fraternity and Sigma XI. He is a member of the American Association for the Advancement of Science, the Entomological Society of America, and the South Carolina Entomological Society, Inc. Also, he is a member of the Board of Directors for the South Carolina Entomological Society, Inc.

At Clemson, Dr. Goodwin teaches medical and veterinary entomology to graduate students. Directing the graduate students is another job of his.

Photography is his hobby, and hunting is his favorite sport. In 1947 he was married and now he has a boy who is three years old and a girl who is one and a half years old. The Army had his services from 1943 to 1946, and he was discharged as a sergeant. Two of those years were spent overseas. Now he is a first lieutenant in the Medical Service Corps Reserve.

* * * * *

She: Stop!

He: I won't!

She (with a sigh of relief): All right, I've done my duty.

J. C. Haley Furniture Co.

HOME OF QUALITY FURNITURE
AT LOWEST PRICE

We Own Our Own Building
No Rent To Pay

Phone 3-1332 656 So. Main St.

GREENVILLE, S. C.

1907 — Forty-Nine Years of Service — 1956

One of the best in the South . . . ultra-modern . . . says 



In the foothills of the beautiful Blue Ridge Mountains, you'll find the Clemson House located in a unique setting — right on the campus of Clemson College. Here you will find all of the services of a great metropolitan hotel yet you will be far away from the noise of a large city. And you'll enjoy the beautifully landscaped grounds and the flower beds. The splendid accommodations and the excellent cuisine offered at the Clemson House are combined with warm friendly hospitality and fine service. The Clemson House is a gem among fine hotels, and the rates are almost unbelievably low. All rooms are air conditioned. Four dining rooms and the Tiger Lounge and Coffee Shop. There is swimming, fishing and golf nearby

FRED L. ZINK, JR., Manager

On East Edge of Clemson, S. C., on U.S. 78, 123 and State 28.

Clemson
 *House*

Daring New 3-Plow Tractor...

CASE "300"



Alive with Spectacular Advantages



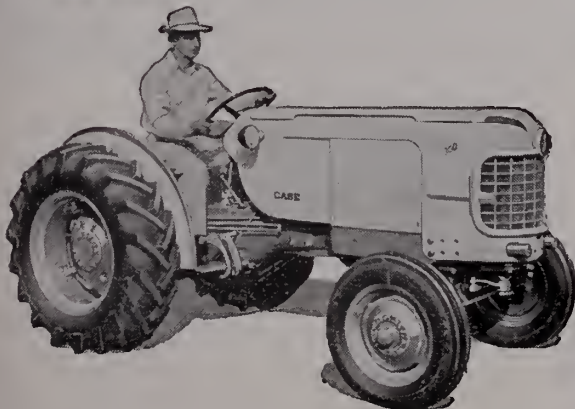
12

speeds

evenly spaced, overlapping gear speeds forward, all the way from 1.6 to 20 MPH... plus three reverse speeds.

- ★ **Powr-Torq Engines...gas, LPG, distillate, diesel**
- ★ **Tripl-Range Transmission...12 speeds forward**
- ★ **Safety-Lock Hydraulic System...duo-control**
- ★ **Cam-and-Lever Steering...new short turning**
- ★ **3-Point Eagle Hitch...constant PTO**
- ★ **Tell-Easy Instrument Panel...eight indicators**
- ★ **Powr-Shift Rear Wheels...plus sliding hubs**

Bursting with features that put thrilling new meaning into performance and horsepower . . . the Case "300" brings to life your dream of the ideal in modern 3-plow tractors. For the first time in any tractor the "300" offers you an amazingly simple, easy-shifting Tripl-Range transmission that makes full use of engine power . . . plus a host of other new advantages . . . for job versatility never before achieved. See your Case dealer now about the new Case "300" . . . you'll agree it sets a new trend in tractors. Ask about the sensible Case Income Payment Plan. For colorful "300" catalog, write J. I. Case Co., Racine, Wis.



THE MEN WHO GUIDE US

(continued from page 15)

dent Association, the **Agrarian**, and head freshman football coach. He the Senior Council. Incidentally, he was a co-founder of the **Agrarian** in 1938. Also he is on the YMCA advisory board. College chairman for Religious Emphasis Week in 1942 and 1952 and chairman of the faculty committee on Student Government are more of his honors.

He is a charter member of the first Civic Club to be organized at Clemson — the Fellowship Club. The Fellowship Club's first president was Mr. Goodale. He was the founder of the local Public Health Clinic and has had charge of it for the Fellowship Club since 1937. The Presbyterian Church had his services as a deacon for many years, and now he is an elder.

He is a member of the American Legion and a veteran of World War I. For action in World War I he received the French Croix de Guerre with a Silver Star citation. When Strom Thurmond was governor of South Carolina he made Mr. Good-

ale an honorary Colonel. He was Clemson's Commander of Civilian Defense for a time during World War II. He is a member of the American Association for the Advancement of Science, the American Association of University Professors, and the American Dairy Science Association. Also he is listed in American Men of Science, Who's Who in American Education, and Who's Who in the South and Southwest. He received the Jewish Award and the Catholic Award for his contribution to religion on the Clemson College campus.

Doctor Gordon Goodale, a Clemson graduate of 1945, is Mr. Goodale's only son. Doctor Goodale is a research chemist with Union Carbide Chemicals.

Mr. Goodale's hobby is welfare work in connection with the local clinic, and his favorite sport is football.

Individual intelligence and backbone are still necessary for modern civilization despite the tendency to gather in huge groups and holler yes to a loud orator.

Said farmer one to farmer two: "My best cow died of Bang's disease. Some hunter shot her."

* * * * *

Country Constable—"Pardon, miss, but swimming is not allowed in the lake."

City Flapper—"Why didn't you tell me before I undressed?"

Constable — "Well, there ain't no law against undressing."

* * * * *

You, down there," shouted her father from the top of the stairs, "Do you think you can stay all night?"

Er-er, thank you," replied the young lover, "but I'll have to phone home first."

* * * * *

Daughter: "I can't marry him mother, he's an atheist. He doesn't believe in Hell."

Mother: "You go ahead and marry him dear; between the two of us we'll convince him he's wrong."

COBLE DAIRY Cooperative, Inc.



DIAL CA 5-5491 FOR
HOME DELIVERY



FARMER OWNED

2802 N. MAIN ST. ANDERSON, S. C.

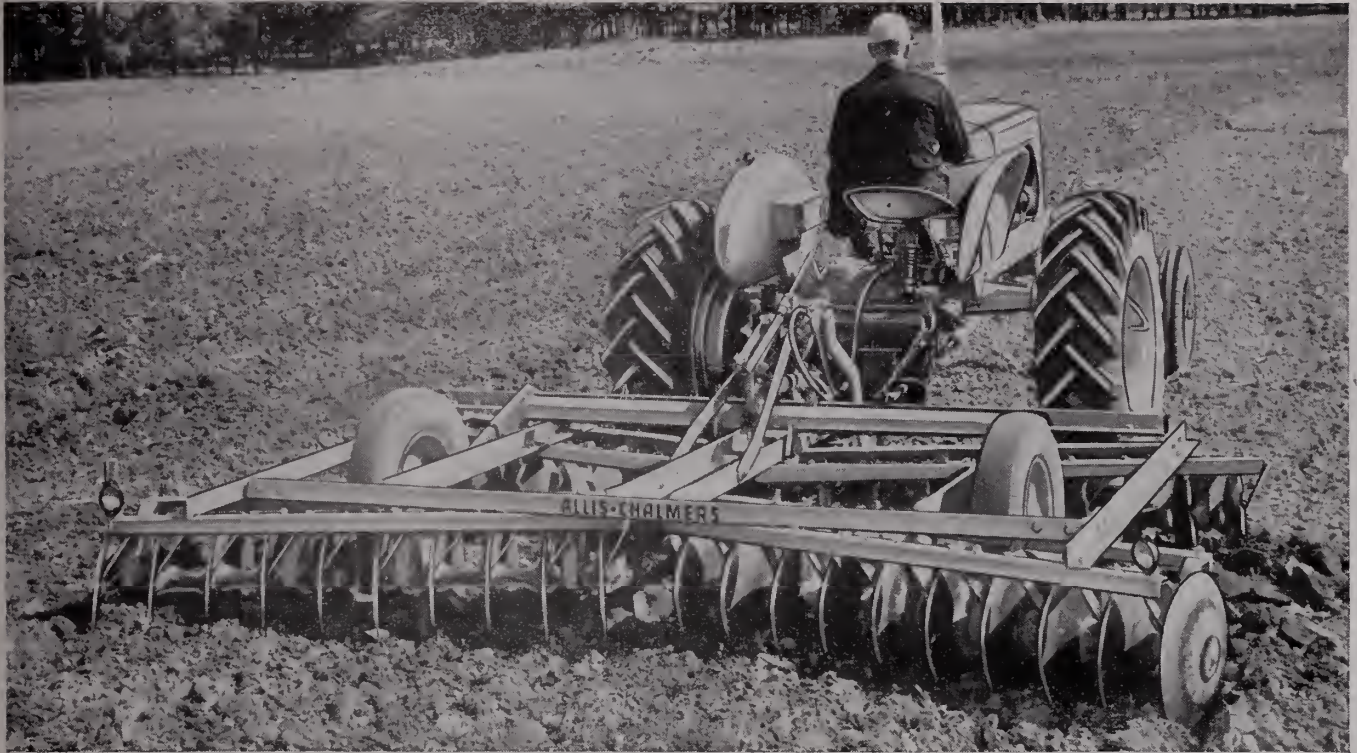
"Researched-Feeds for the Southeast"
at the Red and Yellow Sign of . . .



FEEDS

Research Laboratories at SPARTANBURG
Research Farm at WHETSTONE

Mills Located At
SPARTANBURG and NEWBERRY



Now **TRACTION BOOSTER** Farming with new Big-Capacity implements



Changes a dragging load to a **ROLLING** load!

Hydraulic **TRACTION BOOSTER** automatically shifts implement weight to tractor's drive wheels. Instead of a dragging weight, you have rolling weight . . . an easier load to pull, requiring less fuel per acre.

The work capacity of the dynamic Allis-Chalmers WD-45 Tractor . . . great as it was . . . has now been expanded by *acres* — without increasing the weight of the tractor. This development is made possible by the exclusive Allis-Chalmers hydraulic Traction Booster system and a new remote ram principle . . . as automatic as the tractor's governor.

So that WD-45 owners may capitalize on this added work capacity to the fullest, Allis-Chalmers has introduced a line of new big-capacity, wheel-transported Traction Booster implements of outstanding design and performance.

These include two double-action disc harrows (10-ft. and 12½-ft.); a 4-bottom moldboard plow; and a heavy-duty 4-blade disc plow — all big husky implements with **SNAP-COUPLER** Hitch, and pulled from a single free-swing hitchpoint ahead of the tractor's rear axle.

Full information about this great new development in power farming may be obtained from any Allis-Chalmers dealer. It means *more* work . . . done *better* . . . in *less* time . . . at *lower* cost!

FARM EQUIPMENT DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS



SNAP-COUPLER is an Allis-Chalmers trademark.



A SMASH HIT!
So TUXEDO CHICK MASH
REPEATS THIS
Special Offer!

ONLY
50¢
 Plus ingredients tag
 or list from any
 Tuxedo Chick
 Mash bag.

Carbon Steel!
Sturdy 8" Blade!
**Firmly Riveted,
 Hard, Rosewood
 Handle!**

**... on this \$1²⁵
 Butcher Knife!**

Yes, we're happy to be able to do it—
 happy to tell you again about this
 exceptional SPECIAL OFFER that
 has caused so many additional feed-
 ers to become acquainted with Amer-
 ica's finest Chick Starting feed.

TUXEDO Chick Mash is the pre-
 ferred starting feed among poultry-
 men who figure their profits closest.
 Tuxedo is preferred because it gets
 chicks off to a head start and keeps
 them growing.

See your nearby Tuxedo Feeds Dealer
 NOW! This offer is limited because
 quantities are limited.

Our 75th Year

THE EARLY & DANIEL COMPANY
 CINCINNATI 3, OHIO

TUXEDO Chick Mash

Tuxedo Starting & Growing Allmash
Tuxedo Starter, Grower & Developer Mash



spoonfuls of seed to the hundred yards. The seed should be mixed with soil from the plant bed or with ashes if they are available. The seed should be sown when the wind is not blowing as they are very light. A better stand will be secured if the bed is sown from two different directions. After seeding the bed should be packed by using the feet, a packer, or a roller.

It is often necessary to top-dress the bed with nitrogen sometime during the growing season especially right after an attack of blue mold or an especially cold spell. The nitrogen will give a quicker response if it is in solution. A good solution is five pounds of nitrate of soda dissolved in fifty gallons of water to the hundred yards. The plants should be washed down with more water after the solution is applied to remove it from the leaves and wash it down into the soil. Some farmers prefer to use a light dusting of cottonseed meal on the plants. The meal is taken directly into the plant from the leaf area but should only be applied when the plants are perfectly dry. If Ferbam or Zineb has been used for the control of blue mold, it is not necessary to use any top-dressing because these chemicals stimulate plant growth enough to be sufficient in most cases.

Plant bed covers are used to protect the plants and keep them warm. The covers used are an unbleached cotton cloth which has from sixteen to thirty-two threads per inch. The mesh is usually 22 x 18 or 24 x 28. The 24 x 28 is recommended for use in South Carolina. If the covers are removed from the bed at the end of each season and washed, they will last four or five years.

The bed should be well cared for during the transplanting season. The plants should be toughened by removing the cover from the bed for a short period each day about a week or longer before transplanting. The bed should be watered before the plants are pulled to make the soil around the roots soft so they will not be damaged. If water is added again after the plants are pulled, it will pack the soil around the roots of the plants that are left and cause them to give a quicker growth.

I believe that the farmers in South Carolina will find their yields greatly improved if they pay more attention to their tobacco beds and start off with the healthiest plants they can possibly produce.

TOBACCO BEDS

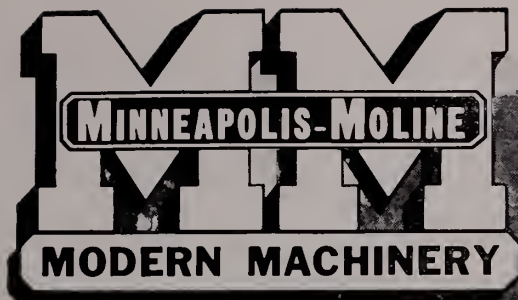
(continued from page 3)

cyanamid, and urea-cyanamid. If burning or any of the cyanamid treatments are used, the soil should be fumigated with DD for the control of nematodes.

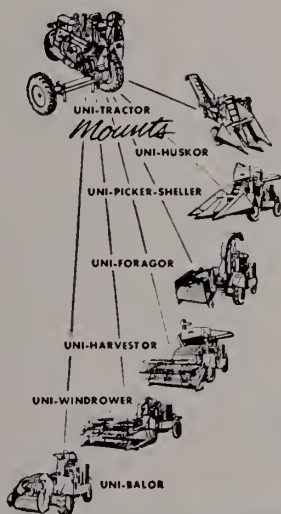
One to one and one-half pounds of a 6-9-3 fertilizer should be applied

to each square yard of bed. The fertilizer should be uniformly applied and then thoroughly mixed with the soil. Too much organic material should be avoided because it may increase fungus growth. Muriate of potash should never be used because the chlorine it contains may cause injury to the young plants.

It is recommended to use about one to one and one-half rounded



Modern farming has gone piggy-back, so
This Farm Fleet has a One-Man Crew!



Motomation has reached the farm!

With a Minneapolis-Moline Uni-Farmor, you command a self-propelled squadron of machines that lets you harvest virtually every crop you grow . . . and you do it from a single power source. You cut hay with the Uni-Windrower, bale hay with the new Uni-Balor. You turn hay or row crops into silage with the Uni-Foragor. You harvest grain, bean, or seed crops with the Uni-Harvester; pick corn with the Uni-Huskor or pick *and* shell your corn with the Uni-Picker-Sheller. And, all SIX Uni-Farmor machines mount on the same Uni-Tractor. *One man* runs them all!

Only Minneapolis-Moline builds the Uni-Farmor. It is another of the outstanding engineering achievements that have given this 131-year-old company *idea leadership* in the farm machinery industry. The Uni-Farmor is one more reason why thousands of American Farmer-Businessmen look first to MM for machines to make farming pay a better profit. It is on this firm rock of acceptance and trust that MM builds for American Agriculture.

MINNEAPOLIS-MOLINE

MINNEAPOLIS 1, MINNESOTA

**NEW UNI-TRACTOR OFFERS
 NEW POWER . . . NEW HANDLING EASE!**

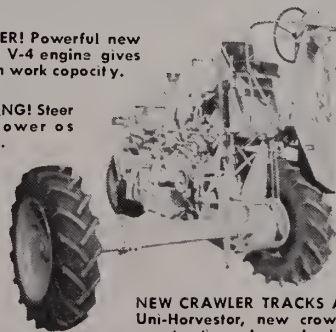
20% MORE POWER! Powerful new high-compression V-4 engine gives you a big boost in work capacity.

NEW POWER STEERING! Steer with hydraulic power as standard equipment.

SELF-PROPELLED VISIBILITY! Puts you on top of every job.

NEW UNI-V DRIVE! The strength and simplicity of flat belts . . . the speed and grip of V-belts.

UNI-MATIC HYDRAULIC CONTROL! Finger-tip handling of all Uni-Farmor machines.



NEW CRAWLER TRACKS AVAILABLE! On Uni-Harvester, new crawler tracks offer sure traction where wheels can't go.



WINNER . . . AND STILL CHAMPION!

In the 1954 International Mechanical Corn Picking Contest MM Uni-Huskors placed 1st, 2nd, and 3rd. Now, in the 1955 contest, the Uni-Huskor proved its Championship by taking 1st Prize in 2-row U.S. competition and placing 1st, 2nd, and 3rd in All-Canada Self-Propelled Corn Picking Contest.

TRY THIS GREAT-TASTING, NEW AND DIFFERENT CIGARETTE TODAY!

*the smoke
feels as good
as it tastes!*



R. J. Reynolds Tobacco Co., Winston-Salem, N. C.

Today's the day to try this new and different king size cigarette! Cavalier is a great-tasting cigarette — and the smoke feels good to you, too . . . smoke after smoke!

You draw plenty of fresh, naturally rich taste through the cooling extra length of Cavalier's top-crop tobacco. Sure — it's the king size smoke with the king size taste. The flavor's

all there! And so is the pleasure of smooth, easy-going smoke that feels good to you. The smoke feels as good as it tastes! Enjoy new Cavaliers today.

**The king size
smoke with the
king size taste!**

new king size Cavalier

31
7
AGRICULTURAL REFERENCE DEPARTMENT
CLEMSON COLLEGE LIBRARY

The Agrarian

OFFICIAL STUDENT PUBLICATION

LEMSON, S. C.

THE CLEMSON A & M COLLEGE

MAY 1956



VOLUME XV

NUMBER 4

BULK RATE — U. S. POSTAGE PAID
PERMIT NO. 4 — CLEMSON, S. C.

Is This the New Frontier?



BY tradition, irrigation was for the West—for semi-arid plateaus and fertile valleys where spring comes cool and green, then fades and burns beneath the summer sun.

And that's just another tradition that farmers have broken to smithereens. As long ago as

1900, irrigation was being used large-scale by Louisiana rice growers. As time went on, farmers here and there began to pump from streams and ponds and wells until, in recent years, thousands have turned to sprinkling systems—east, north, southeast, and everywhere between.



WHERE there's irrigation, there's the need to level and smooth the land. One engineer summed up the trend this way: Land leveling moves east—to the Corn Belt and the Mississippi delta, to the Carolinas, to New Jersey, and Virginia.

Here then, indeed, is a new frontier—in the extension of irrigation, in the conditioning of land for better use of irrigation water, and in the adaptation of farm equipment to new tasks.

Irrigation engineers offer this word of warning. The newcomers to irrigation, if they are

wise, may well consider this one big lesson from the experience of old-timers in the business: *Irrigation is wonderful, but it's no miracle.* It costs money, and it has its problems—every farmer must learn how best to adapt it to his farm, how to live with it successfully, what equipment is necessary, when to apply water, when not to, and how much.

To the men who are diligent and patient enough to find the answers to such questions, irrigation does offer tremendous possibilities. History proves that.



JOHN DEERE • Moline, Illinois

THE AGRARIAN

Volume XV The Clemson Agricultural College Number 4

Carol E. Brown
Editor

Gene Stembridge
Assistant Editor

James W. Wright
Associate Editor

Emory Bishop
Business Manager

Oscar Bishop
Advertising Managers

Wendell Brown

Dixon D. Lee Feature Editor Charles Taylor News Editor
Joyce E. Cox Dept. Editor Dick Fitchett Circulation Mgr.

Departmental Writers—

Watt E. Smith II, Louis Jordan, David A. Buckner, Jack C. Langston,
Richard F. Elliott, Thomas E. Hayden, Carol E. Brown, D. D. Lee, E. C.
Collard, O. R. Bishop, W. S. Roberts, Joseph Jackson.

Advertising Staff—

David A. Buckner.

Advisory Staff—

B. E. Goodale and T. L. Senn.

IN THIS ISSUE

Liquid Nitrogen Solutions	page 3
Pecan Growing in S. C.	page 4
Dwarfism: Headache of the Beef Industry	page 7
Between the Furrows	page 8

THE COVER: The cover shows a liquid nitrogen solution being applied by the dribble method to a pasture. The article on page 3 indicates that this method of nitrogen application is becoming increasingly popular among farmers of this area.

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education, and sponsored by the South Carolina chapter of Alpha Zeta. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

AGRARAN PHILOSOPHY

By Elbridge J. Wright, Jr.
Co-Editor

We, the members of this year's staff of the Agrarian, feel that we have completed a successful year of publication. There have been times when we felt discouraged, but the pleasure we received from seeing a completed issue more than boosted our morale back to a satisfactory level.

In our next year's editor, Carol Brown, we feel that we have selected a capable person who will lead this magazine on to greater accomplishments. We also feel that the entire new staff is the kind of staff that any editor needs to successfully publish a good magazine. To you, the new staff, we extend our sincere best wishes that you may make this magazine one of which we can all be proud.

The Agrarian has this year tried to convey to its readers the important developments in the ever enlarging field of agriculture. We have attempted in all ways possible to give to you some of the information that is being collected here at Clemson and other sources in the hope that we may be of service to the farmer and other agricultural workers. We realize the importance of the farmer and his connection to our national economy, and because of this we will continue to publish this magazine as a means by which we may aid the farmer in any way that we can. It has been, and will continue to be the policy of this magazine to endeavor to promote the agricultural interests of the state of South Carolina and of the South.

Last but not least I would like to express on behalf of the staff our appreciation to the students and faculty members who have worked untiringly to assist us in publishing this magazine. Without the cooperation given us by these persons, we could not have reached our goal.

Etiwan Fertilizer Co.

CHARLESTON, SOUTH CAROLINA



Independent – Prompt – Reliable



— Manufacturers Of —

DEPENDABLE FERTILIZERS SINCE 1868

**COBLE DAIRY
Cooperative, Inc.**



DIAL CA 5-5491 FOR
HOME DELIVERY



FARMER OWNED

2802 N. MAIN ST. ANDERSON, S. C.

"Researched-Feeds for the Southeast"
at the Red and Yellow Sign of . . .



FEEDS

Research Laboratories at SPARTANBURG
Research Farm at WHETSTONE

Mills Located At
SPARTANBURG and NEWBERRY

Liquid Nitrogen Solutions

By O. R. Bishop, Ag. Chemistry '57

Even though the use of liquid nitrogen solutions is not new, the widespread and popular use of them is relatively new, especially in South Carolina. Anhydrous ammonia was known to be a good source of nitrogen for crops back in 1934 in California, where it was added to irrigation water. World War II consumed most of the ammonia from 1940-1945 and extensive research did not begin until after the war was over. Since then, much information has been gathered, but there is still much to learn.

The reasons that nitrogen solutions have come into such demand is the realization by the farmer that;

1—Labor and labor costs are low. The compound, as it is manufactured at the factory, is a liquid, the same liquid sold to the farmer. Dry nitrogen compound are crystallized from solution, dried and sacked. This is the big difference in cost of handling between the liquid and dry nitrogen fertilizer. After the dry compound is sacked, it has to be transported to the storing or shipping area and stacked in piles. All this takes labor, which is eliminated in the handling of liquids, because they are pumped through pipes and stored in tanks.

2—The solutions are easy to handle and apply. Since the tractor is used more for the application of liquid and dry fertilizer, a comparison can be made as to the actual labor involved in loading. The loaded truck has to be very close to the tractor when loading dry fertilizer to permit the laborer to pour the contents of each sack into the hopper. With the liquid solution, a hose connected to a tank is handed to the operator of the tractor and he fills the tank, the work of transferring being done by gravity, pump, or air pressure. A load of dry compound on the tractor only lasts about 5-15 minutes, while a load of liquid will last several hours. A much speedier job is done with the liquids, because the dry nitrogen applicator will usually handle about two rows,

in a row crop, while the liquid applicator with booms, can cover a much larger area in one round. For real ease and simplicity of application, the addition of the liquid to an irrigation system is unique. A home-made rig consists of a 55 gallon drum of solution connected by a hose to the outlet side of an irrigation pump. More will be said about irrigation later.

As shown in the table, the nitrogen solutions may be divided into three general groups: the high pressure, low pressure and non-pressure. Anhydrous ammonia, which is a compressed gas, is the only solution in the high pressure group. When in a liquid state in a closed container, high pressure is developed. (211 psi at 104°F.) The non-pressure group contains nitrogen solutions which develop no pressure in a closed container. They are dissolved in water, similar to table salt in water, which does not create pressure. The low pressure group is a mixture of a non-pressure solution and free ammonia. This free ammonia exerts the pressure, as does the pure ammonia in the anhydrous.

There are advantages and disadvantages to each group. The anhydrous (which means no water) ammonia is costly to handle because of the expensive high pressure equip-

ment necessary, but is the cheapest source of nitrogen because it contains more nitrogen per gallon. The non-pressure is safest to handle for two reasons. 1) The high pressure equipment is eliminated and 2) the caustic action of free ammonia is not as great. The ammonia in the non-pressure is not free, that is, it will not evaporate from the solution. Anhydrous and the low-pressure group will both lose ammonia to the atmosphere. The non-pressure group and low pressure group will salt out at moderately low temperatures, with a few exceptions in the low-pressure, but anhydrous will never salt-out at normal freezing temperatures. For example, the Sodan solution has the highest salting out temperature (58°F) of all solutions while anhydrous has one of the lowest (-108°F.) The low-pressure group is, more or less, a happy medium of the three and is good for general application, but for specific jobs, the high and non-pressure groups are used. The specific advantage of anhydrous is the low cost and high content of nitrogen, while the specific advantage of the non-pressure is the safer handling and flexibility of application.

The chemical composition of the solutions should be mentioned here.

(continued on page 4)

TABLE OF NITROGEN SOLUTIONS

Group	Solution	%N by wt.	Lb. N/gal.	CaCO ₃ eq. to 100 lb. N	Salting out point
Non-pressure	Uran	32%	3.54	180	32°F.
	Feran	21%	2.25	180	47°F.
	Sodan	20%	2.35	119	58°F.
Low-pressure	Nitrana-2	41%	3.79	180	21°F.
	Nitrana-3	41%	3.69	180	-25°F.
	Nitrana-4	37%	3.67	180	48°F.
	Urasol-S	33.5%	2.69	180	18°F.
	Urasol-W	33.5%	2.53	180	-31°F.
	Aqua-ammonia	24.7%	1.84	180	-112°F.
High-pressure	Anhydrous ammonia	82.3%	4.24	180	-108°F.

Pecan Growing in South Carolina

By William S. Roberts, Hort. '56

By far, the most important nut crop grown in South Carolina is the pecan, since the state ranks fifth in the country. The ten counties reporting the largest number of trees were Orangeburg, Greenwood, Aiken, Florence, Lexington, Sumter, Calhoun, Anderson, Hampton, and Clarendon. There are approximately 250,000 trees in production in the state.

In connection with the establishment of a pecan grove the first factor to consider is the variety which is to be planted. To determine this factor there are several factors which enter in to the picture. The most important factors are the type of soil and climate in the area in which the grove is to be established, the disease resistance of the selected varieties, and the quality of the nut. There are several varieties which will meet the required specifications in South Carolina. These are Stuart, Farley, Desirable, Elliott, and Curtis.

The next problem which confronts the individual is the problem of setting the trees. The most desirable pecan trees for planting are those 4 to 6 feet high which have a one year old top and a three to four year old bottom or root. Young trees may be transplanted from the middle of December to the end of February. Pecan trees should be planted 50 to 70 feet apart depending upon the fertility of the soil and the length of the growing season. The more fertile the soil, the farther apart the trees should be planted.

As a rule, 8 to 10 years are required to get the trees in to production of a profitable nature. During this period the land around the trees can be inner cropped. The inner crop will allow the land to supply an income to the producer while the trees are coming into production. The grower should be cautious to supply enough fertilizer for the cover crop and the tree.

After the trees have been set out, the question of what fertilizer to apply arises. This depends upon the texture of the soil. These could be

listed in the following manner:

4-10-6—for mature trees on heavier soils where winter cover crops are grown.

5-10-5—for young or mature trees under average growing conditions.

5-10-10—for mature trees on lighter soils plus a cover crop.

6-8-6—for young trees on heavier soils.

7-7-7—for young trees on lighter soils.

A general rule is to apply 2 to 3 pounds of fertilizer per tree for each year of its age, or if the age of the tree is not known, apply the same amount for each inch of trunk diameter. The fertilizer should be placed in a circle around the tree starting approximately one foot from the trunk and extending outward at least twice the diameter of the spread of the branches of the tree.

The pecan is troubled by several diseases, insects, and maladies. The most common of these is rosette or dieback, caused by zinc deficiency, scab, which attacks the foliage and the husk of the nut, Pecan weevil, which attacks the nut, Hickory shuck worm, which also attacks the nut, the twig girdler, attacking the tree, and the black pecan aphid which attacks the foliage. Pecan trees can also be damaged by sap-suckers which bore into the bark in search of insects, and winter injury due to freezing of the bark which causes splitting.

Zinc can be applied to the soil in the form of zinc sulfate, or can be applied in combination with the spray to control scab. Scab is controlled by first, planting non-susceptible varieties, by practicing good sanitation measures, and by spraying. The most satisfactory spray to control scab is bordeaux mixture of a 6-2-100 concentration. The insects can be controlled by spraying with a DDT spray and a summer oil emulsion. Winter injury to the young trees can be controlled by wrapping the trunks in burlap.

There are a number of other causes which prevent the normal production of a crop. Such factors as lack of pollination, too close spacing, and drought will affect the yield. The lack of pollination will cause the tree to bear no fruit, and is usually present when the male and female trees do not bloom at the same time. Drought will cause what nuts that are present to be of poor quality and poorly filled. Too close planting of the trees will encourage scab, cause the yield to be less, and also lessen the quality of the nuts which are produced.

When the trees come into bearing, the greater part of the pecan crop is harvested in October. After the crop is harvested care should be exercised in storing since the pecan will absorb odors very easily, and will become rancid if stored at high temperatures. Pecans should be stored at 35 to 40°F. in the summer months, and placed in an unheated dry place for winter storage.

For further information on pecans, order Extension Circular 301 from Clemson College.

LIQUID NITROGEN SOLUTIONS

(continued from page 3)

Anhydrous ammonia, in the high pressure group, is pure ammonia (NH_3). Ura-n, in the low pressure group, contains 44% ammonium nitrate (NH_4NO_3), 35.4% urea (NH_2)-CO and 20.6% water. The urea will stay in the soil longer before nitrification. Fera-n is 60% ammonium nitrate with 40% water. Soda-n contains 47.5% ammonium nitrate and 20.5% sodium nitrate (NaNO_3) in 32% water. The sodium may be useful here. Sodium may substitute 1/3 of the potash requirement for crops in a potash deficient soil. These are in the non-pressure group and contain no free ammonia. The Nitra-na 2, 3, 4, are solutions of varying quantities of ammonium nitrate, free ammonia and water. The Ura-sol-S and Ura-sol-W are solutions

(continued on page 10)

CASE tractors

**... that appeal to
the Youthful Mind ...**

3-plow "300"

Tripl-Range transmission gives 12 overlapping gear speeds from 1½ to 20 MPH ... full use of engine power with every implement ... right speed for every PTO machine. Tachometer tells engine speed, shows proper PTO speed. "Tell-Easy" instrument panel also has speedometer, true-time hour meter, electrical fuel gauge, ammeter, engine temperature and oil pressure gauges.

4-plow "400"

Set world's record for fuel economy on gasoline at half load and varying load as well as rated and maximum loads. Also available with Powrcel diesel engine like the Case "500." Both engines have torque to pull normal load when throttled to half speed. Eagle Hitch provides 3-point hook-up of 4-plow implements without leaving tractor seat.

5-plow "500"

Aristocrat of farm diesels! Starts directly on diesel fuel at touch of a button, runs with 6-cylinder smoothness at all speeds and loads. Powrcel controlled combustion prolongs push on pistons, provides lugging power. Six-point filtering system stands guard against dirt and water in fuel. Power steering takes the hard work out of driving.

New Case "75" Combine cuts 7-foot swath... has long straw rack that saves seeds and grain for extra yield ... spike-tooth cylinder to comb stubborn seeds out of tough heads or optional rub-bar cylinder ... variable-speed fan. Shown here with new Case "300" Tractor.



**Call on Your
CASE Dealer**



You'll be really surprised when you visit your Case dealer ... and see for yourself how the beauty and design of these new Case tractors match your fondest dreams of power for today's ways of farming. You'll be thrilled by their performance ... speed ... and handling qualities. Yes, Case Tractors are as modern as your thoughts and hopes. And—with the easy Case Income Payment Plan, you don't need all cash to buy the one you want. J. I. Case Co., Racine, Wis.

MT. VIEW MILLING CO.

Manufacturers

of

High Grade Feeds

USE OUR PRODUCTS AND HELP

CONSUME LOCAL GRAIN



PHONE 532

SENECA, S. C.

TERRY BOTTLING CO.

Bottler of

Pepsi-Cola—Toms

Seven-Up



ANDERSON

and

GREENWOOD, S. C.

HENRY GRAMLING

GRAMLING, S. C.

Distributors of

● STAUFFER INSECTICIDES

● LIQUID FERAN



Manufacturers of

Gramco Fertilizers

We are Very proud to be an active member of the rapidly growing dairy industry for the last 24 years. We heartily thank the fine folks of Anderson and the Clemson area for your generous patronage.



FRED E. PEARMAN

for

Pearman's Dairy Road—Anderson, S. C.

PEARMAN'S DAIRY

Dwarfism: Headache of the Beef Industry

By Joseph E. Jackson, A.H. '56

The first record of importation of cattle into this country was in 1493 when Columbus, on his second voyage brought cattle with him to be used as work stock.

The vast grassland area of the Midwest and Western states was ideally suited for the production of cattle. The first cattle raised extensively on the Western rangeland was Longhorns. These were rough cattle that lacked form, type, and quality, but they did have the ability to withstand the adverse weather conditions common to that area. However, these cattle served the purpose while the cattle industry was in its infancy. But, as the cattle industry expanded, competition also increased. Cattlemen soon realized that they would have to have animals that would reach the desired market weight at an early age, and exhibit good gaining qualities in the feed lots if they were to cope with the increased competition.

Thus a new era of breeding principles began. Cattlemen imported foreign cattle and crossed them with the native stock. Through intensive selection, they developed cattle that reached the desired market weight



Dwarfism and normal Hereford calves. Both are approximately the same age. The short legs are characteristic of the dwarf.

at an early age and also did well in the feed lots. Some new breeds were developed that have gained national recognition. Others of lesser importance have also been developed.

Breeders, through selection, changed the form of the beef cattle from ones that were rough and upstanding to ones that are moderately low-set, compact, and show balance and

symmetry from any point of view.

Cattlemen met and conquered the problem of obtaining a thrifty type animal that would be economical and at the same time meet market demands. However, they are now faced with another serious problem — dwarfism. Various kinds of freaks have always been produced in breeding. Freaks are to be expected in cattle the same as in other animals and in human beings.

The incidence of dwarfism seems to be increasing and is beginning to be a serious economical problem to producers. Some people tend to believe that this increase is the result of breeding for lower set and more compact cattle. The larger cattle usually make the largest and most economical gain. If this is true, breeders should select breeding stock that are slightly larger than the more compact ones commonly being used to day.

When carrier bulls are mated to carrier cows, the offspring will be 1/4 normal, 1/2 carriers, and 1/4 dwarfs. The dwarfs are a loss to the producer since they are uneconomical and will not increase very much

(continued on page 15)



Shorter type Angus calf contrasted with a normal calf of the same age. Note bulldog type jaw and short neck, characteristic of this type dwarf.

**PROFESSOR SENN HONORED**

Professor T. L. Senn of the Clemson College horticultural department has received the only 1956 Danforth Teacher Study Grant awarded to a South Carolinian this year. Danforth grants are designed to encourage college teachers to continue graduate work toward the doctorate degree. Professor Senn was one of 62 selected from this year's recommended list of 400 American colleges and university staff members. His was the only scholarship granted in horticulture. A native of Newberry, Senn financed his education at Clemson by working as an undergraduate laboratory assistant. He graduated in horticulture in 1939 and received his master's degree from the University of Maryland in 1950. He has published 12 papers as a result of researches on horticultural products and is the originator of "The Horticultural Collegiate Newsletter," a publication circulated to the horticultural departments of 100 colleges and universities. His Danforth grant studies at the University of Maryland will be in the field of horticultural physiology.

Prof. Senn and his wife are going to the Danforth Teachers Conference to be held at Camp Miniwanca near Shelby, Mich., beginning Monday afternoon, August 20 and continuing through noon Sunday, August 26.

AGRONOMY CLUB GOES ON THREE DAY TOUR

A three-day, three-stop educational tour in two states was completed April 7 by a group of Clemson agronomy students and professors. The three places visited by the group were the Liggett-Myers Tobacco Company in Durham, N. C., the Hopewell Nitrogen Fixation Plant at Hopewell, Va., and the agronomy department of North Carolina State College in Raleigh. Enroute the tour included observations of crops and soils in the Carolinas and Virginia.

The group was accompanied by Dr. C. M. Jones and Dr. G. R. Craddock of the agronomy department at Clemson.

W. B. Camp & Sons, Inc.

Bakersfield, California

and

Gaffney, South Carolina

Buckfield Plantation

Yemassee, South Carolina



JUDGING TEAM TO MAKE TRIP

Wednesday morning, April 25, two Clemson College judging teams of five men each will leave Clemson to compete in the annual Southeastern Livestock Judging Contest held this year at V.P.I., Blacksburg, Va.

The teams coached by Prof. Dale Handlin have done considerable practice on Wednesday afternoons and Saturday mornings including a trip to Athens, Ga. The team members are L. C. Blanton of Lavares, Fla., J. E. Cox of Loris, A. D. Chamblee of Anderson, R. N. Mathis of Gaffney, R. N. Chastain of Taylors, B. L. Hammond of Edgefield, R. H. Hammond, Jr., of Greenwood, R. G. Johnson of Nichols, T. O. Jones of Younges Island, and J. R. Werts of Ninety-Six.

The teams will compete with eleven other colleges in judging 12 classes of livestock consisting of Angus, Hereford, and Shorthorn breeds of cattle, Yorkshire, Hampshire, and Duroc breeds of hogs, and Southdown breeds of sheep. Reasons will be required from each member on how he placed eight of the classes.

The teams are co-sponsored by the animal husbandry dept., and the Block and Bridle Club.

ALPHA TAU ALPHA INITIATED MEMBERS

Alpha Tau Alpha, National Agricultural Education Fraternity, met March 20 for the purpose of initiating five new members. Those initiated were: John Elliott, Loris, S. C.; Adger Carroll, Westminster; David Buckner, John Island; and Bill Page, Tabor City, N. C.

Prof. B. H. Stribling, advisor for the group, spoke briefly on some proposed objectives for next year. Also, he related some of the highlights of the National Alpha Tau Alpha Convention which he and Monkey Coats attended in Kansas City.

ENTOMOLOGY NEWS

Dr. J. H. Cochran was recently selected for Who's Who in America. Some of his work has been research entomologist E. I. Du Pont De Nemours and Co., associate entomologist of the S. C. Experiment Station, and is now head of the entomology and zoology department here at Clemson College.

VAN LOTT, Inc.

430 Meeting St. West Columbia, S. C.

Distributors of

IRRIGATION EQUIPMENT

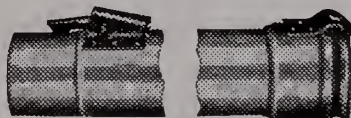
WEBSTER PIPE

JAEGER PUMPS

RAIN BIRD SPRINKLERS

BERKELEY PUMPS

G. M. DIESELS



WEBSTER PIPE CONNECTIONS

LEE'S
Amoco Service Station



Most Modern Station in Clemson

CLEAN REST ROOMS

Honoring Courtesy Cards of
All major Oil Companies



Telephone 6696

**52 YEARS OF SERVICE
TO SOUTHERN AGRICULTURE**



**"The South's Foremost
Seed Breeders"**

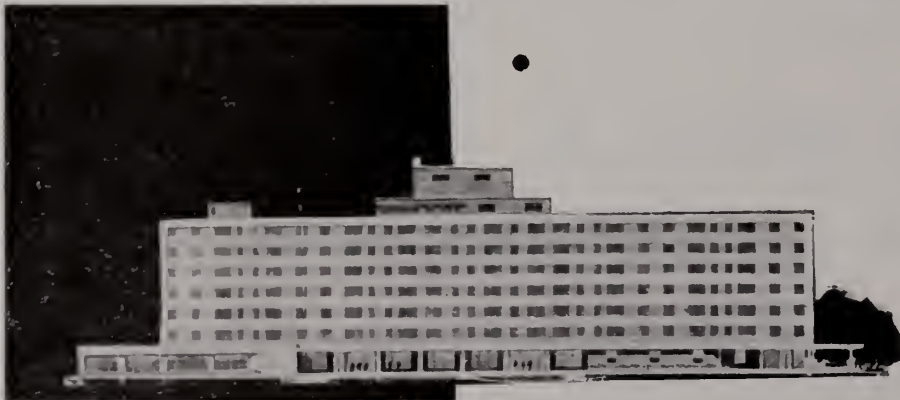
**COKER'S PEDIGREED
SEED CO.**

HARTSVILLE S. C.



Write for Catalog and Prices

One of the best in the South . . . ultra-modern . . . says 



In the foothills of the beautiful Blue Ridge Mountains, you'll find the Clemson House located in a unique setting — right on the campus of Clemson College. Here you will find all of the services of a great metropolitan hotel yet you will be far away from the noise of a large city. And you'll enjoy the beautifully landscaped grounds and the flower beds. The splendid accommodations and the excellent cuisine offered at the Clemson House are combined with warm friendly hospitality and fine service. The Clemson House is a gem among fine hotels, and the rates are almost unbelievably low. All rooms are air conditioned. Four dining rooms and the Tiger Lounge and Coffee Shop. There is swimming, fishing and golf nearby

FRED L. ZINK, JR., Manager

On East Edge of Clemson, S. C., on U.S. 78, 123 and State 28.

Clemson
 *House*

LIQUID NITROGEN SOLUTIONS

(continued from page 4)

varying in content of urea, free ammonia and water. The 30% Aqua-ammonia is 30% anhydrous or free ammonia added to water. All the low pressure solutions will lose their free ammonia when exposed to the atmosphere.

These solutions may be diluted with water by the dealer to lower the salting out point, especially in cold weather. This will change the percent nitrogen per gallon, but the S. C. law maintains that the percent nitrogen in all solutions shall be given. These solutions are checked by the proper authorities to see that the percent of nitrogen is correct.

In applying the solutions, the amount of nitrogen required per acre has to be known. For example, the usual application for cotton is 30-60 lbs. of nitrogen per acre. If the nitrogen of the solution to be added is 2.25 lbs/gallon (Feran), multiply 30 lbs. and 2.25 lbs/gallon and the gallons per acre is then 67.5. Any of the solutions may be used, but there is one for nearly every

(continued on page 12)

Motion Pictures on Insect Control Available for Showing on Campus

As part of its educational program, Hercules Powder Company—makers of toxaphene for agricultural insecticides—has produced the following informative motion pictures. They are available on loan for use by Agricultural College classes. Arrangements should be made by your instructor, giving titles desired and three alternate dates on which your class could see them.

THE ALFALFA WEEVIL AND ITS CONTROL

Shows life cycle, damage, and control methods.

(12 minutes)

COTTON INSECTS AND THEIR CONTROL

Interviews with successful growers, close-ups of common insects.

(40 minutes)

CUTWORM CONTROL

Habits, damage done, and recommended controls.

12 minutes)

THE POLLINATION OF ALFALFA

Close-ups of bees, showing importance of protecting these beneficial insects.

(25 minutes)

THE SPITTLEBUG AND ITS CONTROL

Interviews with farmers and other authorities on control of this damaging insect.

(14 minutes)

DESIGN FOR A LABORATORY

A visit to the Hercules Powder Company's Agricultural Chemicals Laboratory.

(11 minutes)

LOW-VOLUME SPRAYING

How to mix insecticides and adjust sprayer for efficient application.

(14 minutes)

(All films are 16 mm. in sound and color.)

Educational Booklets and Slides Also Available.

*Agricultural Chemicals Division
Naval Stores Department*

HERCULES POWDER COMPANY

INCORPORATED

931 Market St., Wilmington 99, Del.



NX56-3

The BREEDERS GAZETTE

An Index of South Carolina's Outstanding Breeders

ANGUS

A. R. MIMS FARM LYDIA, S. C.
 Breeders of Registered Angus
 Commercial Steers Pig Hatchery

GUERNSEYS

GIPPY PLANTATION
 MONCK'S CORNER, S. C.
 Registered Guernseys Since 1929

HATCHERIES

PINELAND RED FARM MAYESVILLE, S. C.
 USROP Rhode Island Red Breeding Farm
 Certified and Pedigreed Baby Chicks

SOUTHEASTERN HATCHERIES, INC.
 P.O. Box 336
 LEESVILLE, S. C.

HANKS HATCHERY & TURKEY FARM
 Breeders of Broad Breasted Bronze
 S. H. Hanks, Rt. 3 Anderson, S. C.

HEREFORDS

GAY PLANTATION WHITMIRE, S. C.
 J. R. Suber, Owner—Registered Horned Herefords
 Famous Bridwell Breeding

D. E. EFIRD
 Polled Herefords
 LEXINGTON, S.C.

Registered Polled Herefords
 Excellend Blood Lines — Reasonable Prices
 W. H. McLEOD & SON SEABROOK, S. C.

WHITE BROS. HEREFORD FARM
 CHESTER, S. C.
 Registered Polled & Horned Herefords
 J. A. & H. S. White, Owners—Moffett White, Mgr.

THURMAN FARMS
 CHERAW, S. C.
 Breeders of Herefords for Nearly 50 Years
 Phone 7372

Breeders desiring Ads in this Gazette write THE AGRARIAN, Box 2526, Clemson, S. C. Ads \$3.00 per issue.

LIQUID NITROGEN SOLUTIONS

(continued from page 10)

situation. If one in the low-pressure group is added, the solution must be applied at least 2 inches below the surface of the soil. Anhydrous ammonia has to be put at least 4 inches under the surface for best results. The non-pressure solutions may be placed at any depth, but the quickest and easiest way is to apply it on the surface.

With the use of the ammonia solutions, it must be emphasized that liming is a necessity, especially in South Carolina, where the soils have a tendency to become acid anyway. When ammonia is added to the soil, no matter which solution containing it is used, nitrification will take place. Nitrification is the oxidation of ammonia to the nitrate form by soil bacteria. The process of nitrification is acid forming, so liming is necessary for efficient crop growth.

In the chart is given the pounds of CaCO_3 equivalent needed to neutralize a solution containing 100 lbs. of N per acre. For example, a Uran solution is added to the soil to give 100 lbs. N per acre. Converting this to gal./acre gives 354 gals. to be added. Since 100 lbs. of N were added, 180 lbs. of CaCO_3 equivalent must be present to neutralize the acid that will be formed when nitrification occurs. Only the solutions containing ammonia will nitrify.

For application of solutions to pastures, lawns, small grains, and orchards, the non-pressure group is the best. The solution can be applied on the surface, which eliminates the more expensive equipment needed for the other two groups. A quicker application can be attained by use of booms with sprayers or hoses. Application to crops requiring irrigation is easily done by mixing the non-pressure solution with the irrigation water. Two methods

of getting the solution into the system are gravity and suction. In the first is placed above the pump, connected by a hose or pipe to the pump, and the rate is regulated by a valve on the tank. In the suction fed method, a hose is connected from the outlet side of the pump to the drum or tank of solution. The water rushing by the inlet of the hole will create enough suction to pull the solution from the tank into the system. The irrigation system should not contain any of the metals which will be corroded by ammonia. (copper, brass, bronze, steel and galvanized metal)

The equipment used in the application of solutions are fairly specialized, especially with anhydrous ammonia. Anhydrous ammonia requires a high pressure tank, holding about 150-200 gallons of liquid. From this tank pipes run to the blades, usually chisel or disk. The
 (continued on page 14)

here's

BIG-TONNAGE engineering

CROP-SAVING performance

Today's farmers are looking for new efficiency — engineering that saves crop quality, tractor power and dollars. That's the kind of engineering behind these Allis-Chalmers hay and forage machines.

The cut-and-throw cylinder of the Allis-Chalmers Forage Harvester, for example, is the key to big tonnage with low power requirements. It is the heart of a machine that makes man power, tractor power, time and feed crops all go farther. Spiralled, cupped knives cut and throw the forage directly to wagon or truck.

Exclusive blow-and-throw fan gives the Allis-Chalmers Blower big capacity for power unloading wagons. Fan blades are wide and cupped to blow silage and grain *fast* through 9-inch pipe.

Roll-up compression in the ROTO-BALER saves both tractor power and crop loss . . . provides big-capacity haymaking. The ROTO-BALER makes the only round buckle-proof bales with leaves sealed in . . . weather sealed out . . . a joy to handle and feed.

In the Allis-Chalmers power rake, selective control of reel speed and direction provides raking and tedding action that handles hay gently at higher field speeds. Here's a rake with gear-shift control and *seven* outstanding performance features.

These Allis-Chalmers machines provide weather-safe feed. They beat delays that can destroy the feed value of a crop.

Here is Allis-Chalmers *Engineering in Action* . . . big-capacity, efficient day-in-day-out performance in hay and forage equipment that is rapidly becoming the first choice of power-wise farmers everywhere.

ALLIS-CHALMERS, FARM EQUIPMENT DIVISION
MILWAUKEE 1, WISCONSIN



ALLIS-CHALMERS



ROTO-BALER is an Allis-Chalmers trademark

LIQUID NITROGEN SOLUTIONS

(continued from page 12)

blades slice through the soil at about 6 inches and the pressure in the tank forces the liquid into the soil, the rate regulated by a valve or by a pump. A packer wheel usually follows each blade. The pump on this machine, if used, cost from \$100-\$200. The whole machine, including pump, costs from \$600-700. If a farmer uses the solution on more than 20 acres, it would be profitable to buy one.

For application of non-pressure solution, the equipment usually needed consists of a 200-500 gallon tank, mounted on the tractor or a trailer, with booms containing spray nozzles or holes for dribbling. The booms are usually 40 ft. long extended. The pressure to supply the solution to the nozzles or holes is obtained by gravity, pumps, or compressed air. The gravity flow has the tank above the boom with a valve on the bottom of the tank. The force of gravity forces the solutions through the holes, the size of the holes and speed of the tractor determining the rate of application. The disadvantage of this method is the fluctuation of flow, resulting in a relatively uneven application. The compressed air method, where the

air is compressed by a pump attached to a small motor or the power take off, and goes into the tank, forcing the liquid out, is a good method. The rate with this method is also determined by the size of holes and tractor speed. The most popular method of supplying pressure is by pump, because of its ability to give a fast, evenly distributed flow. There are many kinds of pumps that can be used, but the hose pump is probably the best, because of its low cost, simplicity of operation, accurate flow, and non corrosive parts. It is very well adapted to the dribble application of non-pressure solutions. The hoses will last for about 400 hours of operation.

One of the advantages in the use of nitrogen solutions is the speed by which it can be applied. The equipment for applications, especially for the non-pressure group, where the booms can be used, is the reason for this. Up to 300 acres a day can be covered with the use of booms, which also allows faster tractor speed. If the farmer has no special equipment for the application, weed and insecticide sprayers can be used, but only if the solution to be applied is in the non-pressure group and the internal parts are not made of the corrosive metals mentioned before.

The machine should be rinsed thoroughly with water after each use.

Most dealers have their own application equipment and will apply the solution at extra cost. If the farmer has his own equipment, the dealer has trucks equipped with 500 gallon tanks with which he will supply the farmer with the solution.

For storage, the farmer can purchase tanks made of stainless steel, aluminum, or rubber lined steel tanks. The capacity of these tanks is usually around 1,000-2,000 gallons.

The cheapest overall set-up is for the farmer to have his own equipment, both applicator and storage tank. To give an example, one dealer makes these comparisons. He sells a Feran solution diluted to 19%N (to lower the salting out point from 47°F to 33°F) which is delivered and applied for about \$10 less per ton than one can buy sodium nitrate, which is delivered but not applied. If the farmer has his own equipment and uses his own truck and labor for hauling, he will save an additional \$10 per ton. Added up, this totals about a \$20 saving per ton. These figures are only approximate and are not intended to apply to any particular section of the state.

Safety precautions are very important in the use of nitrogen solu-

Big Oak Ranch

BRAHMA — HEREFORD — ANGUS

CROSSES

and

Registered BRAHMAS and HEREFORDS

Importers and Breeders of Mexican Burros

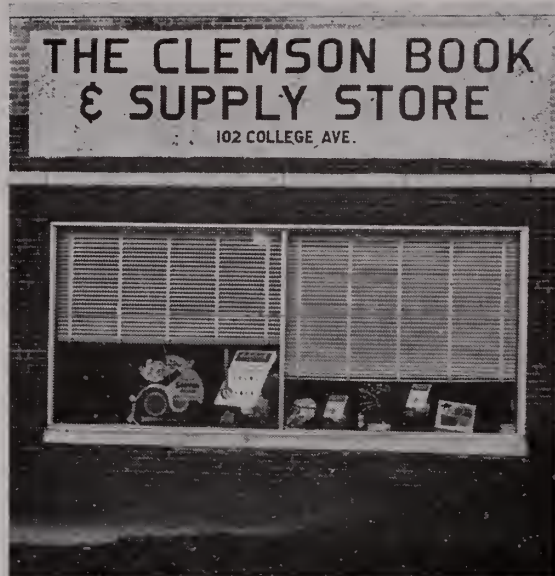
Mount Pleasant, S. C.

Ray M. Buck, Owner

THE CLEMSON BOOK STORE
Official College Book & Supply Store

**NEW IN APPEARANCE,
OLD IN FRIENDLINESS!!!
WE ARE ALWAYS GLAD
TO WELCOME YOU
BACK TO THE CAMPUS.**

L. C. MARTIN DRUG COMPANY
Serving Clemson Men Since 1908



tions, especially anhydrous ammonia. Free ammonia is toxic to animals even in very small quantities. A 3% concentration, or more, in the atmosphere is toxic. Ammonia, however, gives a clear warning of its presence, even in very small concentrations. A .1 of 1% concentration in the air is unbearable, but not toxic even for exposures up to an hour. Ammonia gas, compressed to a liquid is also dangerous because of the high pressure involved, unless it is handled correctly. Another danger is the boiling point of the liquid ammonia which is -28°F . If this liquid contacts the skin, it will instantly freeze that area taking the skin off, causing "ammonia burn." All solutions containing ammonia in any form are corrosive to steel (not stainless steel), iron, brass, bronze, copper, and galvanized metals. Tanks containing anhydrous ammonia should not be exposed to high temperatures. Tanks containing the anhydrous ammonia will stand pressures built up by normal temperatures, but precautions should be taken to keep tanks from very cold or warm places, and long durations in the direct summer sun.

Care should be taken in the non-pressure and low pressure groups to keep their temperature above their salting out point.

NINE DISTRIBUTING POINTS FOR NITROGEN SOLUTIONS

Brown Fertilizer Co.
Blackville, S. C.
Gramling Fertilizer Co.
Gramling, S. C.
Independent Guano Co.
c/o Clinton Milling Co.,
Clinton, S. C.
Pendleton Oil Mill
Pendleton, S. C.
Woodrow Fertilizer Co.
Route 1, Oswego, S. C.
Santee Guano Co. (Greeleyville)
c/o W. D. Evans
Kingstree, S. C.
Home Guano Co.
Mullins, S. C.
Holly Hill Fertilizer Co.
Holly Hill, S. C.
Mutual Fertilizer Co.
(Savannah, Ga.)
Ridgeland, S. C.

SEVEN DISTRIBUTING POINTS FOR ANHYDROUS AMMONIA

Southeastern Liquid Fertilizer Co.,
Albany, Georgia with points at:
Allendale, S. C. Orangeburg, S. C.
Blackville, S. C. Walterboro, S. C.

Mathieson Chemical Co.
(Williamston, N. C.)
Hartsville, S. C.
Southern Cities Ice Co.
Kingstree & Lake City, S. C.

DWARFISM

(continued from page 7)

in weight. If a producer has one thousand breeding cows that are carriers and if they are mated to carrier bulls, there is a possibility that 250 of the offspring will be dwarfs. One can readily see that this represents a terrific loss to the producer.

Dwarfism is a hereditary defect. It is generally agreed by investigators that dwarfism is brought about by a single autosomal recessive gene. The Snorter type dwarf animal is characterized by being short legged, pot bellied, a tendency to stagger as it walks, heavy breathing, and it usually has a protruding tongue and lower jaw, as are illustrated in the pictures accompanying this article. Most of the weaker ones die shortly after birth or somewhere near weaning time. However, ones that are more nearly normal have been kept at experiment stations until they are

(continued on page 16)

An Open Letter to AG Students

Here, at a great University, under fine teachers, you are learning many things that will make your farms both productive and profitable.

In a very real sense, your learning will not stop with graduation because Science doesn't stop, and Progress doesn't stop.

In the same way, the makers of Tuxedo Feeds have been studying for more than 74 years . . . studying how we can best use the ever-advancing front of scientific knowledge to serve the farmers of America with the very finest feeds.

Tuxedo Feeds were among the first to guarantee vitamin content — and add antibiotics for faster, healthier growth.

Tuxedo Feeds were among the first to use feeding cane molasses to increase palatability and aid digestion.

Tuxedo's partnership with Science led long since to the addition of Coccidiostats to its Chick and Broiler Feeds for the prevention of Coccidiosis; and extra Methionine to its Turkey Feeds for healthier flocks; and more recently to the production of dairy feeds designed to encourage multiplication of micro-organisms in the rumen for better milk production.

Farmers today know the Tuxedo line as the complete quality line that gives them the best returns on their feed dollars. In planning your future we suggest you include in it frequent contacts with the friendly Tuxedo Dealer who serves your neighborhood.



THE EARLY & DANIEL CO.
CINCINNATI • TAMPA • SUMTER

TUXEDO FEEDS

for Livestock and Poultry

DWARFISM

(continued from page 15)

several years old. The reproductive organs are functional because dwarfs have been mated at experiment stations and they produced young.

Animals that have normal genes as NN. An animal that transmits dwarfism is called a "carrier." It receives a normal gene from one parent and a dwarf gene from the other parent and is designated as Nn. A dwarf as stated previously is the result of the mating of two carriers of the dwarf gene and is designated as

nn. Therefore, breeding stock may be either NN or Nn because dwarfs are not used for breeding except for experimental work. The possible matings in a herd are NN x NN, NN x Nn, or Nn x Nn. The NN x NN matings produce NN offspring and all are free of the dwarf gene. The NN x Nn matings produce 1/2 NN and 1/2 Nn offspring. All appear to be normal, however half of them are carriers of the dwarf gene. When these carriers are mated to other carriers, the resulting offspring may appear to be normal or it may be a

dwarf. The Nn x Nn mating will produce 1/4 NN, 1/2 Nn, and 1/4 nn. Three fourths of these animals appear normal and one fourth are dwarfs. The problem is distinguishing between the dwarf gene free animals and the carriers. No satisfactory means of doing this has yet been devised. Some work has been done using x-ray methods.

Pedigree and progeny testing are two ways now being used by investigators. L. N. Hazel of Iowa State College writes that a study and pedigree analysis leads to the following conclusions:

1. Both parents are equally responsible when a dwarf is born.

2. Although carriers may vary in the numbers of dwarfs they produce, they are genetically equal. They transmit the dwarf gene in half their reproductive cells except as this varies by chance.

3. The carrier sire used on a herd of clean cows does not produce any dwarfs. He may be recognized as a carrier because of several of his offspring producing dwarfs.

4. The dwarf gene may remain undetected in a herd for a long time. Many carrier cows never produce a dwarf themselves.

5. Dwarf-free animals may be born from matings where both parents are carriers.

Progeny testing is expensive and takes a long time to complete. To prove that a bull is free from the dwarf gene, he has to be bred to cows that are known to be carriers. The only way to be sure that a cow is a carrier is for her to produce a dwarf. The more normal calves that are produced, the greater the chance that the bull is clean. One percent of the carrier bulls can be expected to sire 16 consecutive normal calves when mated to carrier cows, therefore some carrier bulls may escape detection. However, after they have produced eighteen consecutive normal calves when mated to carrier cows, they are considered to be free of the dwarf gene.

Much research is being conducted at experiment stations throughout the United States in an effort to find an accurate way to detect carriers. No one can predict the outcome, but everyone hopes for the best.

Dwarfism is not confined to one or two breeds of cattle, but is found in all breeds, including dairy cattle. More emphasis is placed upon a dwarf-free herd among the registered cattle breeders than previously.

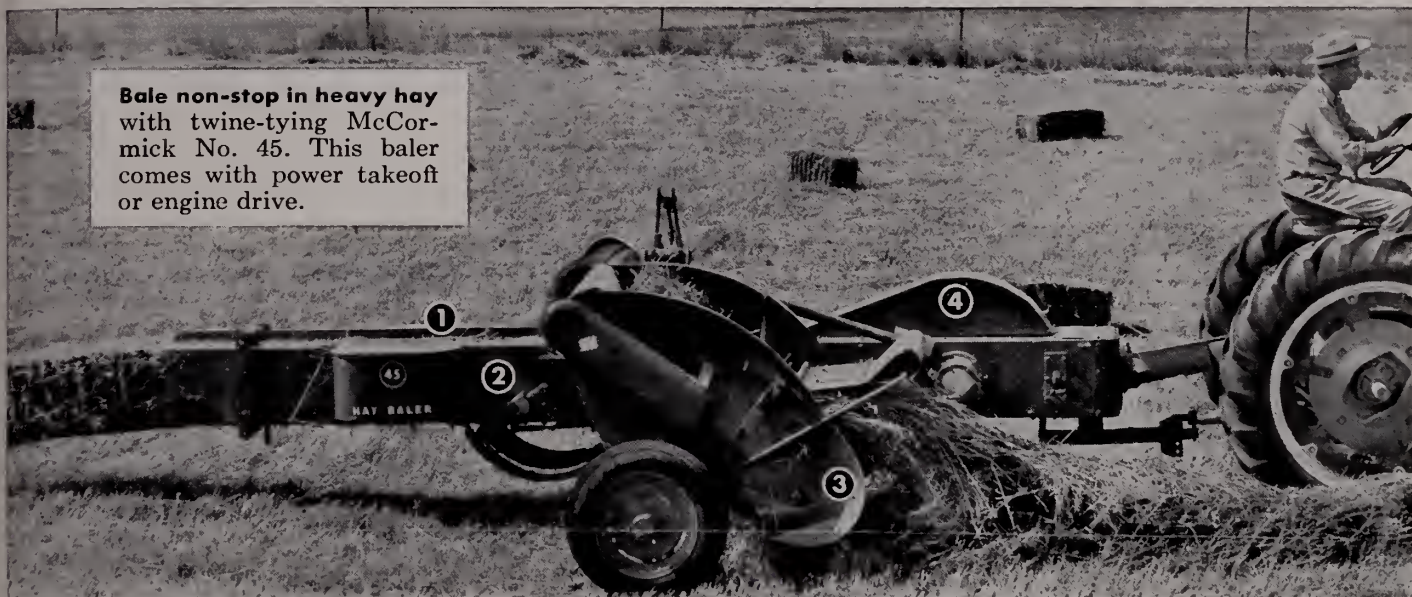
WHY THE

McCORMICK® NO. 45

IS AMERICA'S FAVORITE BALER!

Pace-setting IH features make it the leading feed saver . . . built-in strength makes it the non-stop baling "champ"! Proved on tens of thousands of farms, the McCormick No. 45 is the choice of more farmers and custom operators than all other family-sized balers put together!

This low-cost, twine-tie, pto baler *first* made baler ownership profitable on smaller farms. It pioneered low-level pickup and floating auger for uninterrupted feeding and big daily tonnage. These and other features shown below give the No. 45 performance that can't be copied.



Bale non-stop in heavy hay with twine-tying McCormick No. 45. This baler comes with power takeoff or engine drive.

1. Longer bale chamber makes bales as heavy as 70 lbs. Hydraulic density regulator available.

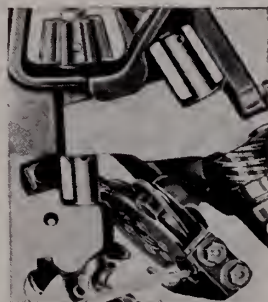
2. Baler safeguards, like needle break-away (shown) head off breakdowns . . . avoid costly "down" time.

3. Low-level pickup, platform, and big bale chamber opening reduce hay travel and save more leaves.

4. Non-stop plunger slices each charge . . . packs bales uniformly. It helps the No. 45 to bale big daily tonnage.



Floating auger adjusts to big or small windrows automatically! It moves hay positively but gently.



Simplified knotters make firm twine ties that stay tied!



Tie your hay at lower cost per ton

McCormick baler twine, made of true sisalana fiber, is backed by a *written guarantee*. It runs longer—9000 feet per bale. It's stronger—325 lbs. average tensile strength! You can tie heavier bales . . . greater tonnage with each ball of twine.



Ask your IH dealer for proof that it pays to own a McCormick No. 45 baler for only two days' baling a year. For big tonnage, choose the McCormick No. 55 baler!

SEE YOUR

INTERNATIONAL HARVESTER DEALER

International Harvester products pay for themselves in use—McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Crowler and Utility Tractors and Power Units—General Office, Chicago 1, Illinois



Send for FREE Catalog

International Harvester Company
P. O. Box 7333, Dept. CP-5, Chicago 80, Ill.

Tell me how a McCormick baler can save me time, feed and hard cash! Send catalog checked:

☐ No. 45 Baler ☐ No. 55 Baler
☐ McCormick Baler Twine

Name _____ ☐ Student

Past Office _____ State _____

My IH dealer is _____

Try the
all-new Cavalier!
 It's Great!



Look for this smart new package!

Light up this great new, *all-new* king size cigarette. Cavalier's *new* blend gives you *great taste* . . . rich, natural flavor that flows to you so

easily through the cooling extra length of Cavalier's top-crop tobaccos. And — the smoke *feels* good to you, so smooth, so easy-going! It

feels as good as it *tastes*! Win this new, true smoking enjoyment for yourself with the *all-new* king size Cavaliers. Do it today!

—the smoke feels as good as it tastes!

The Agrarian

OFFICIAL STUDENT PUBLICATION

CLEMSON, S. C.

THE CLEMSON A & M COLLEGE

NOVEMBER 1956



VOLUME XVI

NUMBER 1

Clemson College Library
Clemson, S. C.

BULK RATE — U. S. POSTAGE PAID
PERMIT NO. 4 — CLEMSON, S. C.



My thanks come easily...at times

My thanks come easily
When my fortunes rise
And my will is king
And all the world seems my estate.

My thanks come easily such times.

But, wait . . .
Today, let me reflect
Upon those thanks I owe
But which I find
Express themselves less fluently.

Today, let me remember to give thanks,
Not only for the sunlight,
But for those darker hours
That teach me Fortitude.

Let me profess, today, a grateful heart,
Not merely for successes I may know,
But as truly for those failures
That teach Humility.

Let me express my gratitude
For all those petty, inner conflicts
Which, once resolved, breed new Serenity . . .
And for those small, distressing fears
That have their ways of building Hope.

Let me breathe appreciation
For all those poignant slights
That teach me Thoughtfulness,
The wrongs that teach me Fairness,
And for each violated trust
That leaves Loyalty as its lesson.

And let me not forget, today,
To whisper thanks for these:
The contempt that teaches Pity,
The tear that teaches Joy,
The pain that teaches Mercy,
And the loneliness that teaches Love.

So, now . . .
Let me reflect upon these thanks I owe . . .

And let my thanks come easily today!

Copyright 1956

JOHN DEERE • MOLINE, ILLINOIS



THE AGRARIAN

Volume XVI The Clemson Agricultural College Number 1

Carol E. Brown
Editor

Gene Stembridge
Assistant Editor

James W. Wright
Associate Editor

Oscar R. Bishop
Business Manager

Wendell Brown
Advertising Manager

Joyce E. Cox Dept. Editor Charles Taylor News Editor
Dick Fitchett Circulation Mgr.

Departmental Writers—

Larry Sandifer, Bill Dailey, Rutledge Hammond, M. S. Cely, Dixon Lee, James F. Boggs, Robert Dibble, Sammy Plowden, Reg Baumgardner.

Advertising Staff—

Talbert Gerald, R. C. Sherrard, Joe Hall, Jr., D. A. Buckner, P. C. Cochran.

Circulation Staff—

John M. Howard, Ben Bowen, Don Still, Eldred Clardy, Franklin McAlhany.

Advisory Staff—

B. E. Goodale and C. M. Jones.

IN THIS ISSUE

I Dare You	page 2
The Uses of Beef By-Products	page 3
Thanksgiving and Turkey	page 5
Teaching Water and Soil Conservation	page 6
Minor Elements, AFEA at Clemson, Deep Tillage	page 7
Between the Furrows	page 8
Why Don't Old Peach Trees Grow Well on Old Orchard Sites?	page 10
Azalea Petal Blight	page 11
State IFYE Delegates Leave for Colombia and Australia	page 12
Tall Corn	page 16

THE COVER shows Miss Phyllis O'Dell of Laurens with a white broad-breasted turkey in her arms. Who said turkeys were not lucky during Thanksgiving?

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education, and sponsored by the South Carolina chapter of Alpha Zeta. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

AGRARIAN PHILOSOPHY

By Carol Brown

I recently heard a very interesting story about a former Clemson graduate. At the time of his graduation he asked a professor what was the best way he could go about making friends while on his new job in Texas. The advice given him was to go to church every Sunday and always act natural. This, he was told, is the best way to make friends and to be a success in whatever he did.

Our friend went to Texas and did as he was advised. Soon his Sunday School teacher gave him a card and asked him to visit him at his first opportunity. When he found the address he had to go through three secretaries before he could find his teacher, and to his surprise he was the president of an insurance company. He was asked if his present job was satisfactory. When he said it was not, his teacher asked if he would like to work for him. "I have observed you at church and noticed the wonderful way you get along with people," he said.

Today, just three years later, he is heading a branch office in Texas and making a very sizeable salary.

To the readers of The Agrarian, whether at Clemson or some other part of the state: the best in you can be brought out by always acting natural and the best people you meet are the ones you meet at church.

And the rains came tumbling down—well, that is what happened when "Miss Flossy," South Carolina's only severe storm of this season, paid her rainy visit. Rain is a mild adjective to use to describe the amount of water that fell on the farms of this fair state. In some parts of the state, as much as 688 tons per acre fell which is based on 6 inches per acre, while the entire state averaged 344 tons or 3 inches per acre. The interesting part of this gift of nature is that it was transported a distance of 1000 miles from a point in the Gulf of Mexico. How does your irrigation system compare to this process of nature in its energy output and volume? By the way, your system does not have to transport from 1000 miles away, and neither does it have to lift to cloud level.

I DARE You!

By Dixon D. Lee, Jr.
Dairy '57

From the Purina Company and the Danforth Foundation comes a yearly opportunity for young men and women all over the nation to further their education on a four-week trip. I dare you to be that person!

I DARE YOU TO BE A MAN

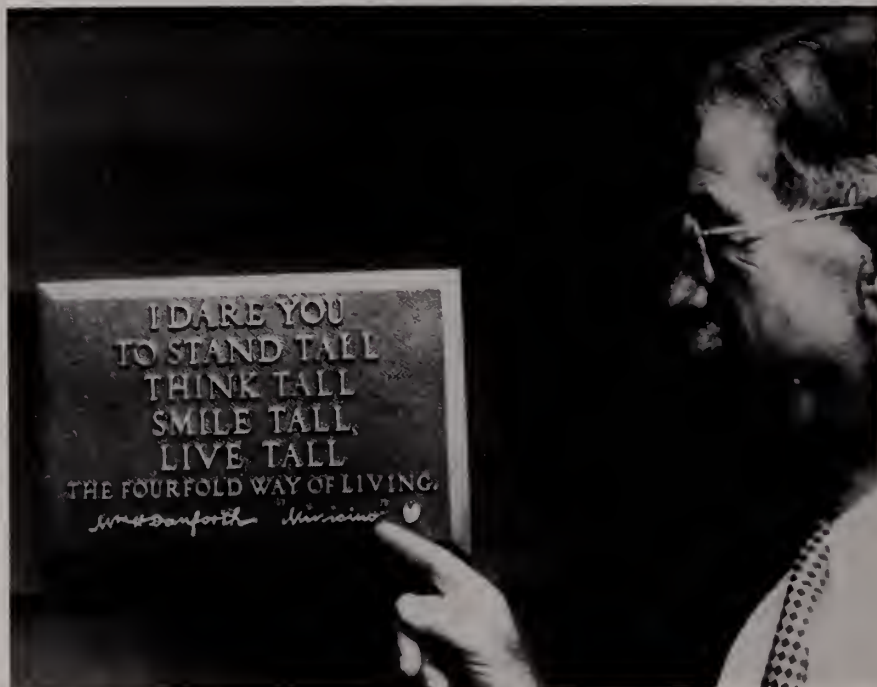
TO STAND TALL
TO THINK TALL
TO SMILE TALL
TO LIVE TALL

This challenge was presented to me along with thirty-four other Danforth Summer Fellowship winners last summer during the four greatest weeks I have ever lived!

I, as a former Danforth fellow, in turn dare all FRESHMEN and JUNIORS majoring in agriculture here at Clemson to become eligible to receive the Danforth Freshman or Junior Fellowship this year.

The Danforth Foundation had as its guests this past summer thirty-four rising seniors in agriculture from the land-grant colleges in the United States, Canada, and Hawaii. The first two weeks of the fellowship were spent in St. Louis, Missouri, with the Ralston Purina Company. The remainder of the month was spent at Camp Winiwanca, Stony Lake, Michigan. In addition to the seniors, rising sophomores from each land-grant college were two-week guests of the Danforth Foundation at Camp Miniwanca.

Much to my pleasure and the displeasure of my buddies at Fort Benning I left summer camp a week early and flew to St. Louis on July 29. There I was assigned a room in Lee Hall at Washington University along with thirty-four other boys. We were already exchanging stories and jokes and letting everyone know we were from the best state. It was very evident that we were going to have a wonderful four weeks of fellowship together.



The Late William H. Danforth Dares You!

Early Monday morning we loaded into a bus and traveled from St. Louis to Gray Summit, where we were to spend the next three days at the Purina Research Farm. This 738 acre farm, located in the foothills of the Ozark Mountains, is the proving ground for nearly all Purina products on the market.

Here we were met by Mr. Earl A. Sindecuse, head of the Public Relations Department of the Ralston Purina Company, and who immediately started things off by having roll call. As we answered the roll we received the first of several checks, and the program was off to a fine start!

In our tours of the farm we inspected pheasants, chukars, pigeons, chinchillas, mink, rabbits, goats, dairy cattle, beef cattle, broilers, pullets, hens, turkeys, and ducks. Each is kept as a separate unit under careful research supervision. There grade animals are handled under conditions similar to those on any average

farm to enable their feeding test results to be what might be expected on the average farm.

With the many interesting tours, competitive sports, ampleness of delicious food, "bare" swims, and surprises, the time had fairly flown by, and we were soon on our way back to St. Louis.

"Sindy," as Mr. Sindecuse soon became known, kept us guessing the whole time we were in St. Louis. He was the only one who knew our schedule and was always springing pleasant surprises. His "Follow me, men!" soon became quite familiar to us.

Thursday morning found us decked out in white shirts and ties for our first appearance at the Purina Company where we began a series of lectures including discussions on research, nutrition, pathology, business law, advertising, personnel management, salesmanship, and other time-ly opportunities.

(Continued on page 14)

The Uses of Beef By-Products

By "Rut" Hammond, Jr., A.H. '57

One fine spring morning, a few years back in May, my Grandad and I were making our usual everyday inspection of the herd. While riding along we came upon a young heifer that was about to drop her first calf, so we thought it best to keep a close eye on her. She was a purebred Hereford heifer and she had been bred to a fine registered Hereford bull; therefore, we were expecting a calf of very high quality.

Later in the day I went back and checked the heifer to make sure that she was doing O.K. Upon arrival I found that she was in the first stage of giving birth to the calf and I thought it would be best if I stayed around just in case something happened. Sure enough about a half-hour later she seemed to be having some trouble. Immediately I went to the house and let Grandad know what the trouble was and then I called our local veterinarian. He said that he would be out as soon as possible.

When the Doc got there he made a thorough check of the heifer before trying to render any help. He found that the legs were crossed in such a manner that the calf couldn't get its head out. Seeing the trouble, the Doc knew just what to do. After a hard tug we had ourselves a nice healthy bull calf.

The next morning the calf was up and walking and as usual wanted to stick his nose into every little thing. From that day until weaning time the calf and its mother were on nice green pasture. The calf was creep-fed along with his usual milk diet. After he was weaned we put him in the dry-lot with the other calves that we were fattening for market.

Every year we sell our cattle to a friend that owns a packing plant. The day that this friend was out quoting his price for our steers I was inquisitive about what happened to the beef carcass and its waste products. I suggested that we go inside when he told me that it was a pretty long story.

He started by telling me that the animal is slaughtered and dressed as soon as possible. The carcass is then cut into quarters or halves, and these make up practically all. They remain here for ten days, after cutting in half they are put in the chilling room for aging and curing. They remain here for ten days after which they are cut into the various retail cuts and distributed to the different retailers. On the average only 54.3 per cent of the liveweight is beef; however, it varies from 40 to 65 per cent according to the weight and finish of the animal. Of the remaining 45.7 per cent of the liveweight, 10.1 per cent has no value and 19.5 per cent is lost through shrinkage, which leaves only 16.1 per cent to be converted into finished by-products. The general public is familiar with the actual beef and its process, along with how it is normally consumed. However, there is a great deal of misunderstanding and ignorance concerning by-products, their origin and uses. The following chart is an accurate summarization of beef and by-products in their major divisions percentage wise:

	% of Green Product to Liveweight	% of Finished Product to Liveweight
I Beef	55.6	54.3
II By Products		
Hide	7.2	5.9
Fats	3.4	2.2
Head	3.4	2.2
Feet	1.5	1.1
Blood	3.8	.7
Casings	1.2	.8
Misc.	7.0	3.2
Valueless materials	10.1	10.1
Shrinkage	6.8	6.8
Additional shrinkage		12.7

In discussing by-products we don't stop with the principle by-products; we go to the finished by-products. The hide can be divided into several categories; cured hide, tail hair, body hair, ear hair, hide trimmings and hide fat. From this division we go to the finished product. The cured



"Rut" checks a carcass

hide goes into sole and upper leather, harness, saddlery, raw hide, belting, etc. The tail hair goes to upholstery, curled hair, and brushes. Body hair goes to felting and plaster. Ear hair is used in making artist brushes. Hide trimmings are used in glue. Hide fat goes to tallow.

The fats are divided into two major divisions: edible oleo fats and inedible oleo fats. The edible oleo fat makes stock, tallow and tannage. The oleo stock finished products are bakery products and oleomargarine.

The head has several subdivisions: bones, horns, brains, tongues, head and check meat, ox lips, and ox palate. Bones usually wind up as steamed bone meal. The finished products of horns are: protective colloid and plaster retarder. Brains are sold directly. Tongues are sold directly and in sausage. Head and check meat is sold in the same manner as tongues. Ox lips are sold directly. Ox palate goes to cracklings which are used in many animal foods.

(Continued on page 15)

Etiwan Fertilizer Co.

CHARLESTON, SOUTH CAROLINA

Independent – Prompt – Reliable

— Manufacturers Of —

DEPENDABLE FERTILIZERS SINCE 1868

LEE'S Amoco Service Station

Most Modern Station in Clemson

CLEAN REST ROOMS

Honoring Courtesy Cards of
All Major Oil Companies

Telephone 6696

"Researched-Feeds for the Southeast"
at the Red and Yellow Sign of . . .



FEEDS

Research Laboratories at SPARTANBURG

Research Farm at WHITESTONE

Mills Located At

SPARTANBURG and NEWBERRY

Thanksgiving and Turkey

By James F. Boggs

Thanksgiving Day, a national holiday celebrated throughout the United States, is a day of religious observance set apart to give thanks for the blessings of the past year, as well as an occasion for family reunions, bountiful dinners and festivities in the home. It originated with the thanksgiving festival held by the Plymouth Colony, December 1621, in gratitude for the ending of a difficult year and for a successful harvest. It became a particularly popular holiday among the New England colonies. The native fruits and vegetables, wild turkeys and pumpkin pies which constituted the fare of that first thanksgiving feast became the traditional food for the day. In the early times Thanksgiving Day wasn't on a certain day of the month of November. In December 1941, Congress, by joint resolution approved by the President, set the fourth Thursday of November as Thanksgiving Day, a national public holiday.



Phyllis tries her hand at catching a turkey

The origin of the name turkey is a very interesting one. When turkeys first came to England, they were confused with guineafowl (of African origin) which had long been known as turkeys because they had been bought from Turkish or Muselman traders. This is one of several explanations that different writers give to the origin of the name turkey.

The chicken or eggs you eat might long ago have had an Asiatic ancestor but the turkey is native to America. Turkeys lived here before Columbus came. We know this because turkey bones were found in old caves and in Indian burial grounds. The Indians used turkey as a source of food as early as 10000 A.D. The turkey had been partially domesticated by the Indians prior to the discovery of North America in 1492. Domesticated birds of the Mexican subspecies were imported into Spain from America about 1519. It was not until about 1800 that the turkeys we

have today got their start. The turkeys we have today are products of crossbreeding. Up to about 1930 turkey breeders attached much importance to breeding large sized turkeys. The Bronze weighed as much as forty-one pounds. Since that time efforts have been made to reduce the size somewhat and to improve the type of market turkey, especially with respect to the amount of fleshing over the breast. Thus the "broad-breasted" strains were developed. A small sized strain of white turkeys with a view toward meeting the demands of many housewives for small dressed turkeys has also been developed. Hen turkeys of this type when dressed weigh six to eight pounds, while the toms weigh twelve to fourteen pounds.

Some of the breeds of turkeys are the Broad Breasted Bronze, the Narragansett, the Bourbon Red, the

White Holland, the Beltsville Small Type Whites, Broad Whites, and others. On the basis of efficiency in utilization of feed or pounds of feed consumed per pound of gain in growth, the broad-breasted strains are apparently superior. The Small Whites and broad breasted varieties are the most popular as shown by the numbers being raised.

It has been said, and I think that anyone who has ever eaten a properly prepared turkey dish will agree, that turkey is a food you can feast on in all forms — fried, roasted, smoked, delicious cold, fascinating minced, and when boiled fit for god-like suppers. Turkeys are also used as "steaks," "burgers," salads, and various other ways. Generally turkeys are roasted for Thanksgiving dinners. Any day is Turkey Day now that they are available the year around.

Teaching Soil and Water Conservation

By David A. Buckner, V.A.E. '57

One of the main problems to be emphasized by South Carolina agriculture teachers in 1956-57 is better use of soil, water, and forest resources.

Current estimates of needs for soil and water conservation measures indicate that here in South Carolina many thousands of acres of land now being used for crops should be planted to trees or perennial grasses and legumes. It is realized also that yields of many of our crops can and should be lifted through better soil and water management and other desirable agronomic practices.

Does this subject need to be emphasized in our educational program with farm people? Consider the following facts:

1. The productivity of our soils is low.
2. The amount of land per capita in South Carolina is small.
3. Yields of many of our crops are relatively low or below average.
4. A large percentage of our rainfall is lost.
5. Progress is needed in seeding pastures and clearing land.
6. Some of the greater needs include planting trees, constructing terraces, applying lime, and growing green manure crops.
7. Many of our crop acres are not put to their best use.
8. Many of the farmers of the state have made no headway in developing a conservation program on their farms.

In an examining of accomplishments of certain practices under the Agricultural Conservation Program in South Carolina, 1950-1954, it was found that only 2.5 per cent of needed terraces have been built; 3 per cent of the acres needed to be planted in trees have been planted. Of the lime needed, only 6.6 per cent of the tonnage has been applied, and only 12.7 per cent of the acreage needed of green manure and cover crops have been planted.

The above facts definitely imply that there is a great need for emphasizing the conservation of our soil and water.

There are several sources of assistance for farmers in conservation. The Agricultural Conservation Program Service provides financial assistance for carrying out conservation practices on the farm. The Soil Conservation Service and the State Forestry Commission offer much of the technical help needed. Needed credit is provided by the Farm and Home Administration and commercial lending agencies. The Extension Service and Vocational Agriculture teachers assist with the educational phase of conservation.

Why is it then that with so much available help farmers are not using better conservation measures? The answer, at least in some cases, must be that they don't want to, or maybe it is ignorance of the available assisting agencies.

To assist the agriculture teachers, a publication, **Teaching Soil and Water Conservation**, was prepared by the Agricultural Education Department of Clemson College and the Soil Conservation Service. This publication contains: (1) information needed by the teacher in teaching conservation; (2) case studies of five actual farms where conservation programs were developed; and, (3) suggestions on teaching conservation.

Small group meetings have already been held with agriculture teachers over the state since the opening of school. The need for conservation, what to teach, how to teach it, and the new publication were discussed at these meetings.

With organized groups of all-day students or the high school agriculture students, young farmers, and adult farmers, it is believed that agriculture teachers have an opportunity to render a worthwhile service in this program.



New Alpha Zeta Initiates

Deep Tillage

By Bill Dailey, Agron. '57

Deep Tillage — well, call it sub-soiling since that is the term best known in South Carolina. In the October issue of **Crops and Soils** this subject was discussed briefly on a national basis as if it were a touchy subject. In its general application it is debatable. The main reason for this is its use with lack of wisdom and knowledge, whereas in specific cases there are definite pros and cons.

The chief purpose of deep tillage is to increase the depth of root penetration by improving the subsoil conditions. If the soil is permeable to water and roots to a depth of six to fifteen inches, the physical condition could not be improved to an advantage. The effect may even be harmful.

In clear-cut situations, results can be predicted. The results are only favorable where the deep tillage is used at the proper time. If the process is done at the proper time there are still two conditions which must be met for it to pay dividends by improved stands, increased yields and decreased weed populations. First, the soil must have enough water stability so that it does not "run together" again during subsequent rains or irrigation applications. Second, traffic over the soil must be minimized to insure that the soil is not compacted again within a short time.

Because the problem is complex and there is lack of adequate information, there is no question that we need an accelerated research program on sub-soiling. Some of this is being done at the Pee Dee Station.

AFEA At Clemson

Larry Sandifer, Ag. Ec. '57

The Student Section of the American Farm Economic Association, known to some as the Ag. Ec. Club, is one of the more active chapters in the South. Clemson's local chapter is part of a national organization covering the entire United States.

A.F.E.A. was organized nearly 50 years ago for the promotion of Agri-

cultural Economics as a profession. A student section was authorized in September 1948. The Clemson chapter, which was chartered in May 1955, is an active member of the Student Section.

The purpose of our organization is to create and promote fellowship among Agricultural Economics students and departmental staff members, to study current agricultural and economic problems, and to better understand the opportunities and responsibilities of those trained in agricultural economics in local, national and world affairs.

Members are composed of students of graduate and undergraduate standing who are majoring in Agricultural Economics or Economics.

Heading the 1956-57 organization of the local A.F.E.A. chapter is President Bill Pressley of Asheville, North Carolina. Other officers include Vice-President John Murphree, Six Mile; Secretary Tony Rutz, Camaguey, Cuba; and Treasurer Carl Lewis, Marion. Professor B. J. Todd is local advisor.

One of the highlights of this year's meetings has been a visit by Dr. Moyle Williams, Chief Agricultural Economist of the National Plant Food Institute. Dr. Williams spoke to the group on job opportunities for Agricultural Economists.

Plans are being made for other interesting speakers and social functions. We of the local Clemson Chapter are looking forward to a very prosperous year of work in our selected field of study.

Minor Elements

By Bill Dailey, Agron. '57

The domestic agriculturist has not recognized the necessity of adding minor elements to the soil for higher yields and better quality, at least the South Carolina farmer has not. In the near future, they will become as conscious of them, especially boron, and manganese, as they are nitrogen, potassium, and phosphorus. Associate Agronomist Norwood Page is doing a large part of his work on boron and manganese requirements for South Carolina's more important crops.

There is already a recommendation on adding boron and manganese to cotton fertilizer. These materials were tested on fields adjoining test plots on farms throughout the state after they were tested on station farms for a period of five years. After adding five pounds of colemanite and five pounds of manganese sulfate the following was the average increase of lint cotton per acre against check plots; 1953—54 pounds, 1954—39 pounds, 1955—43 pounds.

In the above information there would be an increase average income of around \$15.00 at the cost of \$1.00 for the raw material. This is true because of an increase of bolling and an increase in the size of the bolls. As data are accumulated, further recommendations may be expanded to include other elements and other crops.

The problem is the necessity for a different formulation for each crop in amount and material when using these moderately-soluble materials. At present a major problem exists with left-over fertilizer that has been formulated for one specific crop, and, therefore, can not be used for another crop. A slight excess of the minor elements especially iron, causes a toxic condition very easily.

There is a strong belief that in the near future a standard formulation can be derived for all crops with a less soluble material, probably a frit or chelated material—the frit being more practical since chelates are expensive.

"What was that explosion over on Si's farm?"

"He fed his chickens some 'lay or bust' feed and one of them was a rooster."

* * * * *

"You drive, you're too drunk to sing."

* * * * *

The reason women live longer than men is that paint is a great preservative.

* * * * *

Angry father: "What do you mean bringing my daughter home at 4:00 o'clock in the morning?"

Boy: "Well, you see sir, I have a class at 8:00."



BETWEEN

Sowed

AGRONOMY NEWS

Dr. Gilbeart H. Collings, Head of the Agronomy Department, is now making a survey of the accomplishments of the Clemson Agronomy graduates. He has sent out questionnaires to nearly 700 agronomy graduates and is now in the process of evaluating the replies.

* * * * *

The Agronomy Department is fortunate in having recently obtained an X-ray machine. This machine has been installed and will be used in studying the mineral composition of the clays found in various soil types of the state. Because there are several hundred soil types in the state, it will take several years of work to secure the desired information.

* * * * *

Five members of the Agronomy Department will attend the American Society of Agronomy meetings in Cincinnati on November 12. These

men are Dr. G. H. Collings, Dr. H. P. Cooper, Dr. C. M. Jones, Dr. T. C. Peele, and Dr. G. R. Craddock. Some of these men will present papers before the Society.

* * * * *

Dr. E. L. Robinson, Assistant Professor of Agronomy, has just come to Clemson and will do full time teaching in Crops in the Agronomy Department.

BETTER CONTROL FOR ROOT KNOT NEMATODE

A yield response equivalent to 14.3 percent increase in yield of seed cotton is reported at the Sandhill Experiment Station from the fumigation of soil with DD applied before planting to control root-knot nematode.

W. B. Camp & Sons. Inc.

Bakersfield, California

and

Gaffney, South Carolina

Buckfield Plantation

Yemassee, South Carolina



NEW PASTURE DEVELOPMENT

Agricultural visitors who are interested in pasture development will do well to visit one of the Agronomy greenhouses and a few field demonstration areas to see the wonderful display of white clover being grown by Dr. Pryce Gibson. Dr. Gibson is devoting his entire time to the breeding of better strains of white clover for South Carolina conditions.

FORESTRY NEWS

A Forestry Department was established at Clemson in July, 1956. This will result eventually in an expansion in forestry activities.

Two-thirds of South Carolina is covered with forests. A great deal of research is needed to give land owners information about managing their forest lands. Clemson is ideally located from the forestry stand-point because it is close to the

Northern forests, in the midst of the Control hardwoods, and is not far from the Southern pines. We have some 27,000 acres of forest land in the immediate vicinity of the college campus, and there are sizeable forest tracts at the experiment substations. This will make it possible for Clemson to deal with extensive and intensive programs in various phases of forestry.

* * * * *

ALPHA ZETA INITIATES MEMBERS

The South Carolina Chapter of Alpha Zeta, the national honorary agricultural fraternity received eight new members on October 29. Initiates were chosen on the basis of leadership, character, and scholastic record.

Those being initiated were: Joe Ables, George Powell, Jerry Stanaland, J. J. Britton, Joyce Cox, Reg Baumgardner, and Jack Sellers. See photo on page 6.

DAN'S

For the BEST in
Hamburgers and all
types of Sandwiches



CLEMSON
SOUTH CAROLINA

L. C. MARTIN DRUG COMPANY



Clemson,
South Carolina

Why Don't New Peach Trees Grow Well on Old Orchard Sites?

Reginald A. Baumgardner, Hort '57

This question is not easily answered, but recently a new and quite important factor contributing to the problem has been, and is being extensively studied by scientists in Ontario. The peach replant problem has been attributed to a number of causes. To mention only a few of the theories which have been proposed such as (1) A nutritional unbalance in the soil, (2) A deficiency of certain nutrients, (3) Deterioration of soil structure, (4) Unfavorable microbial populations in the soil, (5) Nematodes, and (6) The accumulation of toxic substances in the soil, will give some idea of the complexity of the problem. All of these have been dealt with to some extent, but none except the toxic substances theory has given much of a solution. It is easily seen that the problem needs the aid of such sciences as pathology, entomology, microbiology, chemistry, and horticulture, if it is to be completely solved. The toxic substance theory is the one that is receiving so much attention today, and could very well be the most important contributing factor.

The replant problem is world-wide and has been recognized for many years. It is costing more every year due to decreased production, shorter length of life of the tree, and loss of valuable and scarce farm land. Not only are peach trees affected, but also apple, cherry, fig, and citrus trees. The sooner the cure for the disease is found the less time, effort, and money will be lost.

The symptoms vary as greatly as the factors causing the condition. In some cases the young trees may die, but usually there is only some degree of stunting and various degrees of chlorosis which decreases

production, the amount of which is seldom realized. The below ground symptoms are much more easily recognized. The roots show varying degrees of discoloration, brown lesions on white laterals, the rotting off of finer roots, and the development of a witches-broom effect. Very early symptoms have been observed on the young roots, as early as 24 hours after emergence from the parent stock.

The most important factor causing the condition varies with the locality. In Ohio, the black aphids was reported as the limiting factor, nematode infestation in Maryland, Connecticut and South Carolina. Georgia reports the Clitocybe root rot responsible and California and Ontario scientists recognize and have done a great deal of work with the toxic substance theory.

In California it was suspected that the peach tree root bark possibly contained toxic substances. Alcohol extracts were removed from the bark and from the wood of the roots. The extract from peach tree root bark was found to be toxic to seedlings. Peach roots placed in virgin soil also inhibited the growth of young seedlings. But it was also found that in some cases young seedlings were apparently unaffected when planted in old orchards known to have many roots remaining in the soil. The theory resulting from these experiments is this: There are two sets of organisms found in the soil, one which is capable of producing substances from the old peach tree roots and another set which do not produce toxins. If this theory is accepted, the varying results can be explained. The identity

of the substances produced was not determined.

Ontario has continued the study of this theory. Through the combined efforts of pathologists, chemists, microbiologists, and horticulturists, it has been shown that microbial action on the peach tree root bark does produce toxic substances. These substances are benzaldehyde and hydrogen cyanide. The peach root bark contains a substance known as amygdalin. This substance is not toxic unless acted upon by emulsin enzymes; then glucose, benzaldehyde and hydrogen cyanide are produced. In the roots amygdalin and emulsin enzymes are separated, but any rupture of the tissues which brings them together results in the production of toxins. Certain organisms found in the soil contain the emulsin enzymes within their cells, and are thus capable of utilizing the amygdalin or rather the glucose produced from it. Peach roots have been exposed to the toxins produced and the respiration has been cut by as much as 90%. After five hours exposure there is no reversion to normal by the subjected root.

The amount of amygdalin in peach tree tissues varies from none to as high as 50 milligrams per gram of dry weight, the highest percentage being found in the bark of the roots. The concentration also varies with the season and variety; the Lovell variety, a peach variety used for root stock, is as high in amygdalin as 5% of the dry weight of the root.

Some conclusions may be drawn from the information and facts now known, although the experiments are still incomplete. The period of time that the toxic substances re-

(Continued on page 11)

Azalea Petal Blight

Robert Dibble, Hort. '58

Azalea petal blight is a striking fungus disease which attacks all varieties of cultivated azaleas, but affects only the flower parts of the plant. One day all the flowers on a plant or in a garden may appear normal to the casual observer, but by the next day they may be completely blighted.

This highly infectious disease is relatively new, having been found in the spring of 1931 in the vicinity of Charleston, South Carolina. Since its discovery azalea petal blight has spread to many other states, mainly in the South. By 1937 it had spread along the coastal plain from Wilmington, North Carolina to Lafayette, Louisiana. It was detected in Texas in 1940, California in 1941, Maryland in 1946, and Virginia in 1947. Azalea petal blight is not usually found more than two hundred miles from the coast, where the relative humidity is high.

The conditions that are most favorable for the development of azalea petal blight are high humidity, rain, fog, and a temperature of 65 degrees. Infection may take place from 40 to 80 degrees, but the infection normally occurs between 50 and 72 degrees. Under favorable conditions the disease is capable of destroying in three to five days all flowers with which it comes in contact.

The symptoms of azalea petal blight are very noticeable and easy to distinguish. The disease develops from spores which, under favorable conditions will germinate rapidly, establishing a network of roots in the tissue of the petal. This network of roots causes small white spots on colored flowers and brown spots on white flowers. These spots are about the size of a pin head. The infected blooms quickly collapse and become slimy, as if a frost had hit them.

The life history of the causative organism consists of two stages of

infection. After the blooms have collapsed, hard black spots or sclerotia fall to the ground and the following spring, at blooming time, will produce on the end of small stalks (1/8" high) cupshaped bodies called apothecia. The apothecia contain ascospores which cause the primary infection on the petals. The ascospores which cause the primary infection on the petals. The ascospores will germinate under favorable conditions causing the flower to become infected. As the blight progresses it produces secondary spores or conidia on the surface of the infected petals. These conidia produce the secondary infection which infects other flowers rapidly. Then sclerotia are formed, and the cycle starts over.

Since the discovery of azalea petal blight in 1931 many methods of control have been tested with little success. In 1945 two spray materials were found to give excellent control. They are dithane and phygon, neither of which will kill the fungus once the flowers are infected, but will kill up to 99 per cent of the spores that reach the sprayed petals. To obtain best results from dithane and phygon it is necessary to start spraying as soon as the buds begin to show color, and at forty-eight hour intervals until the plants are in full bloom. Then spray every three days until the blooming period is over. Dithane is an excellent control, leaving no unsightly residue on the flowers. It does not affect the normal length of bloom nor injure the petals. Phygon gives good control but the flowers do not last as long as they normally would. After the third application of phygon, bleaching and burning of the petals from the margin inward occurs. This seems more pronounced in full sunlight than in the shade. Phygon also leaves a slight residue on the flowers.

Other controls that have been tested are nabam (dithane D-14 and par-

zate liquid), zerlate, koppersol, and zineb (parzate and dithane Z-78) used as a six per cent dust. These give fair control, but all cause burning of the petals and leave very noticeable residues.

PEACH TREES

(Continued from page 10)

main in the soil, and their concentration are as yet undetermined, but usually after three years from the time the old trees are removed, the replant problem is not too serious.

If more of the old tree roots were removed, the situation should improve. Fumigation for nematodes or any other organism or insect that would rupture the bark tissues also should be practiced at the time of planting new trees. Nematodes have a double effect because they cut off food and water conducting vessels and also bring in contact emulsin enzymes and amygdalin, thus releasing the toxins. Much new knowledge of the peach replant problem is now available, and if all factors are considered as being determined by the locality or region, then a great deal of loss could be prevented when replanting old orchard sites.

Socialism: If you have two cows you give one to your neighbor.

Communism: If you have two cows, you give them to the government and the government gives you some milk.

Fascism: If you have two cows you keep the cows and give the milk to the government, then the government sells you the milk.

New Dealism: If you have two cows, you shoot one and milk the other; then you pour the milk down the drain.

Capitalism: If you have two cows, you sell one and buy a bull.

State IFYE Delegates Leave For Colombia and Australia

South Carolina's two International Farm Youth Exchange (IFYE) delegates this year are Harry A. Jones of Marion county, who goes to Colombia, South America, and Billy Joe Bailes of Union county, who goes to Australia. Both young men will serve as "grass roots ambassadors" for America for six months.

Harry left Miami, Florida, by plane for Colombia October 16 after spending a week of orientation in Washington, D. C. Two young men from

America go to Colombia this year.

Billy Joe will leave by plane from San Francisco, California, October 20. Before leaving the United States, he will attend an orientation program in Lincoln, Nebraska. Besides Billy Joe Bailes, two other young men will be IFYE delegates to Australia this year.

Some of the orientation program features include subjects such as understanding people, world agri-

culture, trade, U. S. foreign policy, and the American "way of life."

Harry and Billy Joe were selected on the basis of their outstanding achievements leadership, and interest in rural life. Both are former outstanding 4-H club members and as state achievement winners have been delegates to the National 4-T Club Congress. Billy Joe, a Clemson Dairy graduate, is now farming. Harry is a senior in the Clemson School of Agricultural Engineering and is a member of the Clemson College 4-H club.

A total of 125 "grass roots ambassadors" from 36 states will represent the United States this year in 43 other countries.

The IFYE project, begun in 1948, is sponsored by the National 4-H Club Foundation and the Cooperative Extension Service of the U. S. Department of Agriculture and the state land-grant colleges and universities. In South Carolina the State Master 4-H Club of 262 members cooperates with the Clemson College Extension Service in conducting the program.

The IFYE program is based on the idea that understanding is the foundation of world peace. It is the belief that understanding must begin at the family level. Selected rural youths from the United States live with farm families and participate in home, farm, and community activities in other countries for 6 months, and youths from those countries come to live with American farm families.

The project is financed by contributions from 4-H clubs, Master Club members, home demonstration clubs, other rural and civic organizations, industries, individuals, and others interested in world understanding. No federal or state governments funds are used in the exchanges.

The January issue of THE AGRARIAN will feature the state soil testing lab located at Clemson College. Included in this article will be the operation of the lab itself, the services rendered to the farmers of the state and information as to how soil samples may be prepared to send to the lab for testing.

Many more interesting articles will be found in this issue, so if you do not have a subscription, send your name and address to THE AGRARIAN for a subscription.

Modern Farming is more than just *Tractor* Farming

Outdated farming methods—often forced by the limitations of older tractors and equipment—are costly in time, human effort, and money. Machines built 10, or even 5 years ago, are far outstripped by those being produced today. *Never has the difference been so great!*

The latest tractors and equipment provide bigger capacity in the field... greater speed in job changeovers... new savings of time and work through hydraulic control of implements. The operator works more acres in a day... saves fuel and labor... avoids delays that can cost hundreds of dollars.

This up-to-date equipment also provides practical, low-cost material handling not available with older models.

Yes... modern farming means much more than just tractor farming with conventional machines. It means taking advantage of the new earning power available through advanced engineering.

Right now, Allis-Chalmers dealers everywhere are featuring the unusual economy and work power of the WD-45 Tractor and 4-row, 4-plow equipment, with TRACTION BOOSTER system. These machines—priced to save farmers hundreds of dollars—are built to meet today's need for high-powered, low-cost, big-capacity farming.

ALLIS-CHALMERS, FARM EQUIPMENT DIVISION,
MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS



Allis-Chalmers engineering offers surprising advantages in both performance and price. The WD-45 Tractor's dynamic POWER-CRATER or diesel engine and the automatic TRACTION BOOSTER system work together to step up tillage power and reduce costs. To match the WD-45, Allis-Chalmers offers a 12½-foot double disc harrow, 4-furrow moldboard or disc plow, 4-row planters and cultivators.



New 12½-foot disc harrow levels four full stalk rows at a time. Light-draft BAL-PAK bearings never need greasing.

POWER-CRATER, TRACTION BOOSTER, and BAL-PAK are Allis-Chalmers trademarks.

The papa robin returned to his nest and announced he had just made a deposit on a new Buick.

* * * * *

A farmer was noticing a motorist using unfamiliar language while digging his car out of a ditch.

"Stuck in the mud?" asked the farmer.

"No," came the reply, "my engine died and I'm digging a grave to bury it."

* * * * *

"I feel ten years younger after I shave," said hubby.

"Then," replied his wife, "why don't you try shaving before you go to bed?"

* * * * *

Farmer: "What are you doing with those bottles?"

City Boy: "I am going to get a bottle of cream and a bottle of milk from this cow. Which faucet should I turn on for the cream?"

* * * * *

And then there was the cub reporter who was assigned to cover the class play at his high school. His story began—

"The auditorium was filled with expectant mothers, eagerly awaiting the appearance of their offspring."

* * * * *

Grandpa: "I sure do miss the old cuspidor since it's gone."

Grandma: "You missed it before; that's why it's gone."

* * * * *

When the hen-pecked husband died and went to hell, he immediately started bossing the imps around and giving orders.

"Say," Satan roared, "you act as though you owned this place."

"I do," said the newcomer. "My give gave it to me while I was on earth."

* * * * *

"Oh John, let's not park here."

" " " " "

" " " "

" " "

" "

"

First Drunk—Say, did you hear the story of the dog that swallowed the tape measure?

Second Drunk—and died by inches?

First Drunk—No, not that one.

2nd—Oh then it's the one where the dog crawled into the alley and died by the yard.

1st—No, not that one either.

2nd—Well, then, it must be the other. He crawled under the bed and died by the foot.

1st—Wrong again.

2nd—Well then, what is it?

1st—Why, his master caught him eating the tape measure and whipped him so hard he died by the rod.

And then the second drunk fainted, bumped his head on a gas stove, and died by the meter.

I DARE YOU

(Continued from page 2)

Between lectures we visited the biological, analytical, and chemical laboratories of the plant. We were able to see the entire feed processing business — from original tests which were extensive, including feeding tests, to putting the finished product in the bag and shipping.

We spent one day as guests of Swift and Company. Here we saw how buying and selling in the National Stockyards was conducted. In the Swift plant we saw how the meat is processed—following it from the hoof through to the finished product. One day was spent at Barnes Hospital where we saw how the work is carried on in a large hospital. A highlight of this visit was being taken into the Operating Room where we watched an actual operation.

Another day was spent in the Gardner Advertising Agency where we learned what a big business advertising is and the amount of work required in preparing a national advertisement. One morning we visited the floor of the St. Louis Merchant's Exchange where we studied the methods of cash and future trading of grains.

"Sindy" didn't let us down at night either, for he usually had somewhere to take us. Some of our evenings were spent at the Municipal Opera, Cinerama, and several banquets.

"Where have the past two weeks gone?" was the question we asked ourselves as we ate our last supper in the swank Chase Hotel. To comprehend what had gone before was task enough but "Sindy" added to this a brief description of the experiences which lay ahead — to be even more inspiring than anything yet experienced.

The time had come for us to leave St. Louis and move to Miniwanca. We all traveled together by train through Chicago to Milwaukee where we crossed Lake Michigan on a clipper to Muskegon, Michigan. The remaining 30 miles to Camp Miniwanca were traveled by bus. Here was our home for the next two weeks. Soon after arriving at Miniwanca, I met William Weeks, who was a freshman award winner from Clemson. In addition to the Agricultural Juniors and Seniors there were several hundred boys from all over the United States at the camp. They came from high schools, 4-H clubs, and F.F.A. chapters.

The program at the camp was fast moving and challenging, beginning at 6:30 with a dip in the not-too-warm Lake Michigan. The camp program was designed to foster physical, mental, religious, and social development. Our classes in the mornings were on Christian ethics, Four-Fold Living, Problems of Modern Faith, and Life's Essentials. In the Life's Essentials class we heard leaders in the business world tell of their success and how they achieved it.

In the afternoon softball, football, volleyball, aquatic, and track meets comprised the tribal competition agenda. Horseshoes, badminton, and tennis provided individual competition.

Vesper service was held every evening atop Vesper Dune, an inspiring place to worship, surrounded by wind-worn dead trees, high-piled sand dunes, and sea gulls sailing over Lake Michigan. Some of the most inspiring moments of the camp were spent on this dune listening to some of the most inspiring speakers in the country while the sun slowly sank from view into the placid waters of Lake Michigan in the early evening.

(Continued on page 15)

BEEF BY-PRODUCTS

(Continued from page 3)

The feet are divided into four major divisions: dew claws, sinews, bones, and hoofs. Dew claws are used in glue, tallow and tankage. Sinews are used in cracklings, glue and tallow along with tankage. The bones have several finished products: raw bone meal, poultry bone meal, neatsfoot oil, glue and tankage. The hoof is used in fertilizer manufacturing.

Blood is classified as dried or fresh. The fresh blood is used in sausage, albumin and fibrin. The dried blood is used in plant and animal food.

Casings are subdivided into weasonal, bladder and intestines. The three are used in tallow and tankage. More important is the intestine which is used as a container for sausage.

Under the miscellaneous heading we have several sub-divisions: heart, liver, sweetbreads, tail, kidneys, tripe, glands and gall bag. The heart goes into direct trade and sausage. Liver is used for medical and drug uses. Sweetbreads go to direct trade. The tail goes to direct trade. Tripe goes to direct trade and sausage. The glands are used for medical and drug purposes. The gall bag divides into three separate divisions: gall, gall bag and gall stones. The gall goes to medical and drug uses. The gall bag is used for tankage and tallow. Gall stones are used in oriental medicines and perfume.

In finishing his informative talk my buyer friend stated that meat packers on the average pay to cattle producers almost all that they get for the beef. Most years the by-products provide enough to pay expen-refrigeration, sales expense, and taxes.

After having learned that a beef animal is used in so many different ways, I found it hard to believe that the calf my Grandad and I assisted at birth could be processed and utilized effectively in so many different ways.

I DARE YOU

(Continued from page 14)

The nights' activities were spent in games and tribal competition. Some of the activities were low councils, rodeo, indoor track meets, high councils, mock convention and stunt night.

Now as I look back on the four

Do AG Students make GOOD HUSBANDS?

Yes, they do . . . although most of 'em wait till they get their hands on that sheepskin and a piece of ground of their own before they start out to prove it!

AG students make *mighty* good husbands because the time they spend in classrooms pays off in increased productivity and bigger profits when they do get their own farms.

And you can't fool today's college-graduate farmer about the things that help make those bigger profits for him, either.

Take *feeds*, for example . . . poultry and livestock feeds. Today's farmer knows there is no short cut to the bank — it's the quality feed that pays off in the long run.

And in Feeds, the words "quality" and "Tuxedo" are synonymous. Tuxedo Feeds provide that *balanced nutrition* which brings profitable results.

So, in planning your future, Mr. Farmer of Tomorrow, after you've got the little matter of the bride and the rose-covered bungalow out of the way, plan to drop in frequently on the friendly Tuxedo Dealer who serves your neighborhood.



The Early & Daniel Co.
CINCINNATI 3, OHIO

TUXEDO FEEDS
For Livestock and Poultry

weeks I spent on the Danforth Fellowship, I realize more and more the worth of Mr. Danforth's project. Truly, the fellowship with the other fellows and others who had a part in this four weeks holds many memories for me. Most of all though, I have a challenge; A challenge Mr. Danforth gave to everyone he came into contact with. He dared me To Stand Tall, To Think Tall, To Smile Tall, and To Live Tall. Only in accepting this challenge can I be my own self at my very best all the time. Having made decisions, en-

larged my horizon, and broadened my contacts, I believe I gained from these four weeks what Mr. Danforth dared and planned the program for. To Mr. William H. Danforth and the others who made it possible for me to make this trip, I'll ever be thankful for the four most wonderful weeks of my life.

Freshman and Junior Agricultural students here at Clemson College, I dare you to win the Danforth Fellowships in 1957. If you do, you will enjoy one of the most extraordinary experience of your lifetime.

TALL CORN

Two student-driven cars crashed on the avenue. "Whattzamatter? hol-lered the driver of one. "Ya blind?"

"Blind?" the other muttered. "I hit ya didn't I?"

* * * * *

The psychiatrist looked at the new student suspiciously.

"And what do you do for social life?" he asked.

"Oh," said Joe, "I just sit around."

"Hmmm, don't you ever go with girls?"

"Nope."

"Hmmm, have you any desire to go on dates?"

"Well sort of."

"Then why don't you?" asked the doctor more suspiciously.

"My wife won't let me."

* * * * *

"What made you decide to be a paratrooper?" asked the co-ed of the ROTC who had just returned from summer camp.

"A plane with three dead engines."

* * * * *

In order to impress the class further concerning microorganisms, the doctor singled out a shy little nurse in the back row.

"Stand up, young lady," he ordered. "Now to show how closely you have been following me, I want you to tell the class why it is that there are so many patients in your ward."

After a timid pause, the little nurse broke up the lecture by replying. "Doctor, I work in the maternity ward."

* * * * *

Think twice before you speak. That way you may be able to think of something twice as insulting than if you spoke right out.

Nobody ever kissed a girl unexpectedly. The closest you can come to it is to kiss her sooner than she expected.

* * * * *

And now to the serious side of living: Patriotism.

I'm glad that I'm American

And proud that I am free;

But I wish I were a little pup

And Russia was a tree!

* * * * *

A Scotchman, and Irishman, and a Jew had dinner together. When the waiter came with the bill, the Scotchman promptly said he would take it. The next day the newspaper carried a headline: "Death of a Jewish Ventriloquist."

* * * * *

A city boy and a country lad were walking down a street. Coming toward them was a product of the beauty parlor — permanent wave, scarlet fingernails, drugstore complexion and gaudy lipstick. "Now what do you think of that?" asked the city boy. The farm boy looked carefully and observed: "Speaking as a farmer, I should say that it must have been mighty poor soil to require so much top-dressing."

* * * * *

"No," said the man at the wheel. "I can't say I've ever had to complain of back seat driving. In fifteen years I've never had a word from behind."

"What kind of car do you drive?"

"A hearse."

* * * * *

Some people object to divorce," said the Reno lawyer. "But a large number of divorces proves that America is the land of the free."

Perhaps," said the lawyer from New York. "But the steady persistence of marriage shows that it's also the home of the brave."

The other day farmer Brown got his face caught in the corn picker and the doctor had to graft some new skin on it. Well, I don't know where they got this new skin but it seems as though when Mr. Brown gets tired his face wants to sit down.

* * * * *

Said the nanny goat to the billy goat: "You can go as far as you want to, tall dark, and stinky . . . just don't kid me."

* * * * *

British film censor when asked why he allowed scenes from Italian and French films showing married people in bed together. "Because there is a consistent report that they are occasionally to be found there."

* * * * *

There are only two ways to handle women but unfortunately nobody knows what they are.—Pipe Dreams.

* * * * *

Frosh: Hey, where are you going in such a hurry?

Soph: I just bought a textbook and I want to get to class before the next edition comes out.

* * * * *

Night Watchman: "Young man, are you going to kiss that girl?"

Freshman: "No, Sir."

Night Watchman: "Then hold my lantern."

* * * * *

She: "How did you find the men at the party?"

Her: "I just opened the door marked 'MEN' and there they were."

* * * * *

Headline in a local newspaper — "Father of Ten Children Shot—Mistaken for Rabbit."

* * * * *

"If it's funny enough to tell, it's been told; if it hasn't been told, it's too clean; and if it's worth reading, the editors get kicked out of school."



Fast-Hitch models with Hydra-Touch® control of transport and cutting height fit Farmall® 200, 300, 400, and International® 300 Utility tractors.

now! Cleaner cutting, finer stalk shredding with **McCormick® No. 25 Rotary Cutter**



Trailing models may be used with any 2-plow or larger tractor. All models cut 57 inches wide. Special driver shield affords the operator maximum protection.

Your IH Dealer will demonstrate . . . see for yourself the superior cutting action of the new McCormick No. 25 rotary cutter! Available on the liberal IH Income Purchase Plan.



® **SEE YOUR**

INTERNATIONAL HARVESTER DEALER

International Harvester products pay for themselves in use—McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Crawler and Utility Tractors and Power Units —General Office, Chicago 1, Illinois.

You cut, shred, and spread stalks or brush, in one continuous operation, with a McCormick No. 25 rotary cutter. Finely shredded crop residues save hours of disking time, improve plowing cover, build soil humus, and contribute to a well-mulched seed-bed. With new open-throat design, cutter knives slash tall, rank stalks before being knocked down.

Shredder attachment doubles shredding action. Two twisted knives on additional rotor arm cut and deflect stalks upward into regular cutting knives for extra-thorough shredding action. Stationary shredder arm, mounted on cutter housing, and rear grill further increase pulverizing action. Attachment is quickly removed for other jobs.

Enclosed gear drive turns on heavy-duty ball bearings in oil bath to minimize power requirement and assure longest life.



**Send for
FREE
Catalog**

**International Harvester Company
Dept. CP-11, P.O. Box 7333, Chicago 80**

Please send me full information about the new McCormick No. 25 Rotary Cutter.

Name _____ ☐ Student

Address _____

Post Office _____ State _____

My IH Dealer is _____

Make friends with **WINSTON**

WINSTON
TASTES GOOD!

LIKE A
CIGARETTE
SHOULD!

R. J. REYNOLDS TOBACCO CO., WINSTON-SALEM, N. C.

Enjoy finer filter smoking!

Find out how *good* filter smoking can be! Make your next pack Winston! You'll like the *flavor*, because it's full and rich-tasting. And just as important — you'll like the exclusive Winston *filter* that lets the flavor come through for you to enjoy. Try Winston for *finer* filter smoking.

Switch to **WINSTON** America's best-selling, best-tasting filter cigarette!

162

7

AGRICULTURAL REFERENCE DEPARTMENT
CLEMSON COLLEGE LIBRARY

The Agrarian

OFFICIAL STUDENT PUBLICATION

CLEMSON, S. C.

THE CLEMSON A & M COLLEGE

JANUARY 1957



VOLUME XVI

NUMBER 2

BULK RATE — U. S. POSTAGE PAID
PERMIT NO. 4 — CLEMSON, S. C.

Agricultural Reference Library
Clemson Agricultural College
Clemson, S. C.



Where visions grace the sky, Freedom shall bless the land

OLD GLORY is a set of principles, a covenant of human rights, rippling in the breeze. So long as the great body of Americans respect the traditions and the principles for which Old Glory stands—so long shall the flag be a vision of hope, a shield against the storms.

VISIONS are elusive sometimes. But they have a way of coming down to earth. This thing called *soil conservation on the land* was once a vision—little more than the seed of an idea, the idea that farmers could work together to solve their mutual problems. The seed proved to be remarkably viable, for the soil conservation district idea has settled down like a protective blanket over our good earth.

There is more than physical resemblance between a contour-stripped field and the red and white stripes of Old Glory. The soil conservation district embodies the very essence of the rights and freedoms for which our flag stands. Cherishing those rights and freedoms, farmers have organized soil conservation districts that are of *local people*, by *local people*, for *local people*.

A soil conservation district is composed of local people who see their own problems and solve them, who see their own responsibilities and shoulder them. They are local people doing that which they should do, voluntarily, with no infringement of rights and liberties, with scarcely a law, rule, regulation, or tax. The soil conservation district, in action, is literally a bit of the freedom of enterprise that made America a land of opportunity and abundance.

Soil improvement, through good land use, is a modern vision, a new frontier of rural America.

JOHN DEERE • MOLINE • ILLINOIS



THE AGRARIAN

Volume XVI The Clemson Agricultural College Number 2

Carol E. Brown
Editor

Gene Stembridge
Assistant Editor

James W. Wright
Associate Editor

Oscar R. Bishop
Business Manager

Wendell Brown
Advertising Manager

Joyce E. Cox Dept. Editor Charles Taylor News Editor
Dick Fitchett Circulation Mgr.

Departmental Writers—

Larry Sandifer, Bill Dailey, Rutledge Hammond, M. S. Cely, Dixon Lee, James F. Boggs, Robert Dibble, Sammy Plowden, Reg Baumgardner.

Advertising Staff—

Talbert Gerald, R. C. Sherrard, Joe Hall, Jr., D. A. Buckner, P. C. Cochran.

Circulation Staff—

John M. Howard, Ben Bowen, Don Still, Eldred Clardy, Franklin McAlhany.

Advisory Staff—

B. E. Goodale and C. M. Jones.

IN THIS ISSUE

Agrarian Philosophy	page 1
Continuous Buttermaking Processes	page 2
Clemson's Soil Testing Program	page 3
The Livestock Judging Team	page 5
Have Poisons Killed Your Game Animals?	page 7
Between the Furrows	page 8
The Men Who Guide Us	page 11
Why Grow Dwarfs?	page 12
Chemically Green Winter Lawns	page 14

THE COVER shows an outline map of South Carolina with four test-tubes of soil to indicate the need for more people to have their soil tested.

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and the Department of Vocational Agricultural Education of the School of Education, and sponsored by the South Carolina chapter of Alpha Zeta. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

AGRARIAN PHILOSOPHY

By Carol Brown

THE MOST VALUABLE "CAPITAL"

To start almost any kind of business in our modern age requires a lot of capital. This is quite different from the infant years of our country, when land was free and all a man had to have was a strong back and plenty of courage. Even then all that was required to set up a trading post was a log cabin in a suitable location, a few hardware items, some staple groceries, and a little calico. Just about all exchange during that time was by the barter system, so money did not come into play as much as it does today.

Today huge sums of money are required to go into any kind of business venture whether it is farming or anything else that you would care to name. If a man does not have capital and cannot borrow it, his chances of going into business for himself are very slim.

If you look capital up in the dictionary you will find various meanings. One of them states that "capital is a stock of accumulated wealth." Another says that capital is "an aggregation of goods used to promote the production of other goods." Still another definition says that "capital is anything that can be used to increase one's power or influence." I would like for us to combine these and form still another definition of capital. "Capital is a stock of accumulated values that are used to promote one's concern over his fellow man." This is the type of capital which is more valuable to us than any other kind we might name. This type of capital cannot be borrowed and there is no certain terms in which it may be counted. This capital is given to us by our parents. It comes from the love and affection they have for us and the desire they to teach us the real values of life. It comes from the Christian home and the Christian training which we have received from the two people who are most interested in our lives. This then is the most valuable capital that anyone could ever have.

For this reason, the January 1957 issue of the AGRARIAN is humbly dedicated to the source of our most valuable "capital"—our parents.

Continuous Buttermaking Processes

Dixon D. Lee, Jr., Dairy '57

The manufacture of butter has developed from an infinitely old domestic art into an industry which is important as a contributor to human nutrition and as a livelihood for millions of people in the many parts of the world where dairying is a major enterprise.

You would think that such an industry being so old and involving so many people would have seen a more spectacular development than buttermaking has since it graduated from the farm kitchen to the factory some eight decades ago.

Butter, being as old as recorded history and dating back to the Hindu writings of 2000 B.C., has been processed with methods and utensils of a crude sort. Advances in technological development have been slow, but today the butter industry is taking a tremendous stride forward and is breaking away from the buttermaking methods of our forefathers. Over 10 years of intensive designing and experimenting preceded the realization of buttermaking by continuous processes which was made available in 1949.

This process was long anticipated and was received with keen interest by those who saw the need for streamlining production methods, increasing efficiency and reducing drudgery in the butter industry.

An increase in production, decreases in man-hours and in floor space used, and higher, more uniform quality are measurable benefits obtained by the many who converted their buttermaking from a batch to a continuous system. Additional savings resulting from this conversion are reduced steam and refrigeration requirements, elimination of butter washing, and reduction in cold storage.

You might wonder now about how the butter from this continuous process stacks up against that churned in the conventional barrel churns. First we think of body and texture. Continuous butter has a firmer, more compact body that is waxy and plastic.

Flavor, being of prime importance, of the two types when compared, indicated that there was an improvement in flavor of the butter manufactured by the new method. This is in part due to the elimination of the buttermilk and its associated flavors early in the process and in part due to vacuum pasteurization which removes volatile off-flavors.

As to moisture and salt distribution the continuous system is superior to the batch method because with the batch method it is quite difficult to obtain desirable distribution of moisture and salt.

The keeping quality of continuous butter is better because of the improved sanitation, high efficiency of pasteurization, and more uniform distribution of salt.

Better control of off-flavors has been obtained through the use of this new system of buttermaking. The incorporation into the butter of an inert gas like nitrogen to replace the atmospheric mixture of oxygen and nitrogen normally found in butter is a feature which should reduce the danger of oxidative deterioration. The sole use of stainless steel on all surfaces which come into contact with the product works in the same direction. There is no contamination by metallic ions which will cause oxidized tallowy flavors when the butter is stored.

Having discussed the properties of the continuous buttermaking system, let us run briefly through the process of making butter by this revolutionary system.

Farm-separated cream at the intake is dumped into two vertical stainless steel holding tanks, from which it is pumped into a centrifugal heater, where it is heated to 120 degrees F. The centrifugal action of the heater acts as a pump to then push the heated cream to the nearby separator. There it is discharged from three outlets as concentrated milk fat, "light" skim and "heavy" skim.

From the separator the concentrated milk fat goes to a vacuum

pasteurizer where it is properly pasteurized and cooled under vacuum. This milk fat then is pumped into composition control vats where the golden concentrated milk fat is standardized for fat, pH, flavor, moisture, salt and color.

From the composition control vats the hot concentrated milk fat is pumped into a chiller worker where it is converted from a liquid into butter by sudden temperature change. Passing through two chilling tubes the temperature of the fat is dropped from 110° F. to 40 degrees.

The butter now goes to a "Texturizer", the finished butter drops directly into the hopper of the butter printer, where it is cut, wrapped and cartoned.

What part will the continuous buttermaking equipment play in the butter of the future? The dairy industry forecasts the ultimate conversion of the entire industry to the Continuous Buttermaking practice. But what about the small operator? Obviously the continuous buttermaking process described here is a method for large scale operations and the present users are plants which already have large volumes of production. The many small creameries throughout the buttermaking areas of the United States would, under their present organization, not be able to take advantage of the process. In due time competition, high manufacturing costs, labor shortage, and the necessity of bringing their plant facilities up to date may compel many of these creameries to reorganize into larger units. There will then arise an interest in the application of modern methods of manufacturing butter.

Because of its many attractive features, the continuous buttermaking process will receive serious consideration by more and more manufacturers, and the process will evolve, through continued research and use, to a higher and higher state of perfection and bring forth a product which is a real credit to our great dairy industry.



Jack Clemons arranges the samples in order before running another series of tests.

In the early thirties the soil testing program at Clemson College was begun on a small scale in an effort to better characterize the soils of South Carolina for fertility status and to make predictions of the need for fertilizers and soil amendments. For many years this program continued as a part of the Agronomy Department. However, effective July 1, 1955, it was set-up as an independent program and has since been known as the Department of Soil Testing.

In 1951, when the soil testing program was being expanded, Dr. H. G. Allbritten, Head, Department of Soil Testing, came to Clemson College to set up and develop a modern soil testing laboratory. He received the B.S. degree, with a major in Chemistry, at Murray State College; the M.S. degree, with a major in Agronomy, at the University of Kentucky; and the Ph.D. degree, with a major in Soils and a minor in Agricultural Biochemistry, at The Pennsylvania State University. Dr. Allbritten has had several years of experience as a Research and Extension Agronomist at other State Agricultural Experiment Stations before joining the Agricultural Research Staff at Clemson College.

The Soil Testing Department has four full-time employees and requires several part-time employees, usually students wanting work, during the rush seasons. More than 17,000 samples were tested last year.

Soil samples, for test purposes, may be submitted through the farmer or grower direct or they may send them through the local County Agent, Soil Conservation Service, Vocational Agriculture Teacher, and others interested in getting more soils tested each year for fertilizer and lime requirements.

(continued on page 15)

Clemson's Soil Testing Program

Carol E. Brown, Agron. '57



Jack screens some newly arrived soil samples.



Mrs. Aull checks the pH of soil samples on the highly sensitive electric pH meter.

SERVING THE FARMERS
IN NORTH AND SOUTH
CAROLINA SINCE 1906



Planters
Fertilizer & Phosphate Co.

CHARLESTON, S. C.

CHARLOTTE, N. C.

The Livestock Judging Team

"Rut" Hammond, Jr., A.H. '57

Throughout the United States and Canada are Land-grant schools such as Clemson which offer several majors such as Mechanics, Engineering, and Agriculture. All of these schools have an Animal Husbandry Department and students in these departments comprise the livestock judging team. In this article I am going to describe some of the activities in which the 1956 Clemson Livestock Judging Team participated. The livestock judging team here at Clemson had been discontinued up until last year, when it was revived under the sponsorship of Professor Dale Handlin.

Many of you readers probably don't know how a livestock judging contest is run, so I will try to explain the procedure to you. The team judges cattle, swine, and sheep. There is usually a class of bulls, heifers, or fat steers in the cattle division. As for swine, there could be a class of breeding gilts, boars, or market hogs, and in the sheep classes one might find a ewe, ram, or fat lamb class. In a contest there are twelve classes that are placed, and reasons have to be given on eight of these classes. Reasons are given in the order in which the class is placed, and they are given orally to an official judge. In a contest the placing is done in the morning and reasons are given in the afternoon. The judge has to have a good memory to remember the classes, but notes may be taken to help him remember. There is a possible score of fifty on placing and fifty on reasons which adds up to one-hundred possible points for a class.

A team is composed of five members and there are several teams competing in a contest for team prizes. Each individual on the team may compete for individual prizes also. To obtain the team score all five scores are added together and, the team with the highest score wins.

The members of the 1956 team which went to Chicago are: Roger Chastain, Taylor; Joyce Cox, Loris; Bobby Hammond, Jr., Edgefield; "Rut" Hammond, Jr., Greenwood; Gordon Johnson, Nichols; and Roy Mathis, Gaffney. The team took several trips to contests last spring and this past fall.

THE V. P. I. TRIP

We left early one April morning with two teams of five men each. We rode all morning and arrived on the N. C. State campus early in the afternoon. Here we worked out practicing placing some classes, and that night we gave reasons. While on the campus, we looked over some of their experimental work and some of the new buildings. They had some fine herds of cattle and some

excellent sheep, so by stopping here we gained a lot of knowledge and got some useful practice too. The next day we moved on to the V.P.I. campus and registered and got our rooms. That night we went to bed early to get plenty of rest before the contest the next day. The contest lasted all day and after it was over all of us were pretty tired. The next morning we went to the breakfast-banquet where they told us the outcome of the contest. We didn't do too well but came back home with a lot of experience.

THE CHICAGO TRIP

As many of you in the cattle, swine, and sheep business know, the International Livestock Exposition at Chicago is the largest in the world. To represent Clemson in the Intercollegiate Judging Contest was indeed an honor for the members of the livestock judging team. In this contest there were thirty-nine schools represented.

The team left Clemson on the morning of November 17th. The first stop which was at the Berry Schools in Mount Berry, Georgia. They had some classes of hogs and cattle picked out for us so we went right to

(Continued on page 7)



The Livestock Judging Team—From left to right, Coach Dale Handlin, Roger Chastain, Bobby Hammond, Roy Mathis, Gordon Johnson, Joyce Cox, "Rut" Hammond.

ANDCO FEED and SEED

Anderson, S. C.



Quality Seed

Known Origin

Genetically Pure

MOUNTAIN VIEW MILLING COMPANY



Manufacturers
of

High Grade Feeds

USE OUR PRODUCTS AND HELP
CONSUME LOCAL GRAIN

PHONE 532 SENECA, S. C.

SPRING TIME IS AROMATIC
TOBACCO PLANTING TIME



PLANT AROMATIC TOBACCO
FOR THAT
BOOST IN INCOME



For That Ready Market Contact

**SOUTHEASTERN
Aromatic Tobacco Co.**

1628 East River Ext.
ANDERSON, SOUTH CAROLINA



For Your BEST BUY in a new or
Used Car or Truck

— SEE —

MOORE'S Inc.

Authorized Chevrolet Dealer

Greenwood, S. C.

Operating Continuously Since 1925 — Phone 9-7211



Have Poisons Killed Your Game Animals?

M. S. Cely, Jr., Ent. 57

What are garden sprays and dusts doing to birds in my yard? Will BHC, Toxaphene, Malathion, or other new poisons to control crop insects, harm quail and rabbits? Can insecticides be applied safely around farm ponds? Is insect control by chemicals compatible with the maintenance of wildlife? These are just a few of the numerous questions the entomologist and zoologist of today are asked, and for some of the answers much research and study are needed.

One of the chief problems the entomologist has today is the invention of new insecticides, since insects have the ability to build up a resistant strain to most insecticides within three to five years. The entomologist must also consider the harmful effects on the animals being exposed to the specific area and most of all the toxicity of the insecticide to humans. With these thoughts in mind, I shall try to explain how these mammals, birds and fish are affected by the poisons of today.

As with DDT, mammals usually show more resistance to poisoning by the new insecticides than do birds and fish. Tests on laboratory animals indicate that, as a general rule, Methoxychlor, TDE, BHC, Chlordane, and Malathion are less harmful than DDT. Intermediate in their harmful effects on mammals are Lindane, Toxaphene and Chlordane; more lethal than DDT are Heptachlor, Aldrin, Endrin, Dieldrin, Diazinon, EPN, Parathion, and TEPP. Usually some variation in response to the various poisons can be expected among different kinds of mammals. For example, Aldrin applied to Colorado's rangeland at the rate of two-tenths of a pound per acre in rolled wheat bait to combat Mor-

man Crickets killed the majority of the wild mice but there was no observed effect on deer and rabbits. Many of the chlorinated hydrocarbons are very harmful to birds. Among these, tests have proved that Aldrin used to control grasshoppers has killed Red Winged Blackbirds and some young waterfowl. The less destructive hydrocarbons would be Toxaphene, Methoxychlor, and BHC.

Some of the organic phosphates are very harmful to birds. Numerous blackbirds and bobolinks died in Georgia rice fields when Parathion dust was applied at a rate of four tenths pound per acre. TEPP is a penetrating insecticide and actually goes through the horny covering surrounding the birds' feet.

Oddly enough the organic phosphates which are so deadly to mammals appear less harmful to fish than the chlorinated hydrocarbons. TEPP breaks down rapidly in water and only its initial effects are important. EPN is harmless to fish when applied as a mosquito control at one tenth of a pound per acre.

Among the chlorinated hydrocarbon insecticides, Endrin was the most toxic of the number tested in fish laboratory experiments. Dieldrin, Toxaphene, Lindane and DDT are also deadly if applied in appreciable amounts. TDE and BHC are safest to fish and are recommended for use in areas where preservation of aquatic life is a consideration. Also a pointer here is to never use an emulsion or oil as a carrier for the insecticide. Always use something that will settle to the bottom of the pond, such as dusts, wettable powder, and granules.

Bird watchers, garden club members, and other conservation groups have a justifiable concern as to the

possible hazards to wildlife from insect control operations. Often though, they do not know what facts to obtain about an insect control program, or how to evaluate them. Sometimes, too, there is a tendency to condemn all insecticides without considering the good resulting from their use, or because of isolated cases of damage which may have been carelessness in the use of insecticides in what might have been an otherwise safe program. Entomologists are just as open-minded as any group of people, and most of them are anxious to limit wildlife losses to a minimum.

The primary factors to be considered in appraising the possible damage to wildlife from an insect control program are; 1—The rate of insecticide to be used, 2—The animals apt to be adversely affected. Always apply as much insecticide as is needed but never apply too much or the wildlife may be affected.

Another factor to bear in mind is the size of the area to be treated. Smaller areas will be repopulated by animals much sooner than larger ones. Inquiry also should be made as to the manner in which the insecticides are to be applied. For example, never use aircraft spray on a windy day because over half of the insecticide will be lost.

Because of the sensitivity of fishes, crabs and other aquatic life to many insecticides, direct application to streams, lakes and coastal bays should be avoided as far as possible. The equipment used to apply the insecticides should never be washed in these waters. Caution should also be exercised in applying materials near water and marsh habitats if there is danger of their being washed into these water areas by rain.

LIVESTOCK TEAM

(Continued from page 5)

work practicing. From here we moved to the Mountain Cove Farms located in the northern portion of Georgia. After working here we moved on to Knoxville, Tennessee where we spent the night. Early the next morning we got up early so

that we could go out to the University of Tennessee farm. After an all day workout here we moved to Lexington, Kentucky and that afternoon we stopped by Calumet Farms and saw their stud barn. There were several famous horses here and we enjoyed seeing them very much. From here we went to Indianapolis,

Indiana where we spent the night. Tuesday we stopped at Lynnwood Farms, which is an experimental station of Purdue University, and practiced most of the day. Early that evening we arrived in Urbana, Illinois, the home of the University of Illinois. We stayed there two days

(Continued on page 15)



DAIRY CATTLE TEAM PLACES SECOND IN GUERNSEY CONTEST

The Clemson College dairy cattle judging team finished ahead of ten other college teams in competition at the National Dairy Cattle Congress held in Waterloo, Iowa, in October.

Out of 32 teams competing, the Clemson team placed second in judging Guernsey breeds and tenth in judging Jerseys. Overall, the team placed 22nd in the competition.

The members of the team are: Ben L. Cook, D. D. Lee, and B. T. McDaniel.

LEE RECEIVES LEADERSHIP AWARD FROM FOUNDATION

Daniel Dixon Lee, Jr., of Dillon, South Carolina, is a recipient of an Agricultural Leadership Award made annually by the Milk Industry Foundation, an international association of fluid milk dealers. He received a cash award and an all expense paid trip to the Milk Industry Foundation's annual convention, which was held at Atlantic City, October 31-November 2. At the convention he received an award citation from Dr. Arthur C. Fay, member MIF College Relations Committee. This award is one of five presented to outstanding students of dairy manufacturing from colleges in the United States.

DAIRY NEWS

On January 15 and 16 the Clemson College Dairy Department will present an ice cream conference and clinic. Prof. W. H. E. Reid of the University of Missouri will be featured as clinic leader and banquet speaker. He will show pictures taken over Europe this past summer and speak about dairying in Europe.

James E. Cushman, Dairy graduate of 1951, is now secretary to Sen. Strom Thurman in Washington, D. C. Mr. Cushman has, since his discharge from the U. S. Army in 1953, been director so the S. C. Dairy Commission in Columbia, S. C.

Mr. J. R. Moss, Dairy graduate of 1933 and former member of the Dairy staff at Clemson, was a special visitor on the college campus. Mr. Moss is manager of the Industrial Division of the Kelco

Co., manufacturers of food stabilizers, in New York City.

Mr. John C. Heustess, Dairy graduate of 1952, has resigned his position as assistant to Dr. Graham of the Dairy Dept., to become Asst. Superintendent of Sumter Dairies in Sumter, S. C.

William R. Bellamy, Dairy graduate of 1953, received the first master's degree in August 1956, ever given by Clemson College in the field of Dairy Manufactures. Mr. Bellamy is now employed by the Barber Pure Milk Co., in Birmingham, Alabama.

AGRICULTURAL ECONOMICS NEWS

Dr. Ben T. Lanham, Agricultural Economics graduate of Clemson College, class of '37, became the head of the Agricultural Economics Department at Auburn in September of 1956. After receiving his BS from Clemson, Dr. Lanham, did graduate work at Iowa State and Michigan State.

J. P. Davis, Vice-President of the Southern Liquid Fertilizer Company of Albany, Georgia was recently elected Director of the Clemson Alumni Corporation. Mr. Davis is an Agricultural Economics graduate in the class of 1936.

C. E. Pike, an Agricultural Economics graduate of Clemson, class of '37, and now a member of the Foreign Agricultural Service, has recently returned to the United States after several years of service as Agricultural Attache in New Delhi, India.

AGRONOMY NEWS

Former Dean of Agriculture Dr. H. P. Cooper presented a paper in Cincinnati in November, 1956, before the American Society of Agronomists dealing with his theories on the cause of bloat in cattle. His paper was well received and the Cincinnati newspapers carried a writeup of his paper under large headlines.

Dr. J. H. Smith, Associate Agronomist, has just returned from a meeting held in Clearwater, Fla., where he presented a paper concerning the activities of soil microorganisms in South Carolina.



LIVESTOCK JUDGING TEAM MAKES TRIP

The Clemson College Livestock Judging Team competed in the International Intercollegiate Livestock Judging Contest November 24, 1956 at Chicago, Illinois. The team, coached by Professor Dale Handlin, worked out at Berry School, Mt. Cove Farms, University of Tennessee, University of Kentucky, Lynnwood Farms, and the University of Illinois enroute to the contest.

Team members making the trip were Roger Chastain, Taylors; Joyce Cox, Loris; B. L. Hammond, Edgefield; R. H. Hammond, Jr., Greenwood; and Roy Mathis, Gaffney.

The contest consisted of five classes of beef cattle, three classes of sheep and four classes of swine with oral reasons given on eight of these classes. There were 39 teams entered in the contest and Clemson placed 25th. The three top teams were Iowa State College, Purdue and Oklahoma A & M College, respectively.

The team was sponsored by the School of Agriculture, Animal Husbandry Department, the Block and Bridle Club and the South Carolina Livestock Producers Association.

ALL HAVE JUST RETURNED FROM MILITARY SERVICE

J. W. Pridmore, A.H. graduate of 1954, is now employed at the State Penitentiary Farm, Boykin, South Carolina.

Meek M. Cone, A.H. graduate of 1954, is now employed by the Ralston Purina Company and is working in Alabama.

B. C. Amick, A.H. graduate of 1954, is currently employed with Swift & Co., Atlanta, Georgia.

Haley M. Jamison, formerly Assistant County Agent in Virginia, has been appointed Extension Sheep Specialist at Clemson.

NON-VET NEWS

George Bowen, A.H., graduate of 1956, is currently employed with Swift & Co., Atlanta, Ga.

Fred McLaughlin, A.H. graduate of 1956, is working for Ralston Purina Co., in Alabama.

John F. Wise, formerly Assistant County Agent, Laurens, S. C., is now Extension Livestock Specialist-Marketing, Clemson, S. C.

Richard F. Wheeler, formerly Associate Professor of Animal Husbandry, was appointed Head of the Animal Husbandry Department at Clemson.

RESEARCH WORK ON WEED CONTROL OF WOODY ORNAMENTALS

Mr. John P. Fulmer, a Clemson graduate in Horticulture in 1953, M.S. in Entomology in 1955, was added to the Horticulture staff to do research work on ornamentals. He was Supt. of Parks in Sumter, S. C., before coming to Clemson this past April.

Mr. Fulmer is working at present on weed control in woody ornamentals with particular interest in ornamentals grown by nurserymen in South Carolina. Research in ornamentals has been neglected not only in South Carolina, but also in the country as a whole. Very little work has been done on weed control, but it is rapidly increasing.

Weed problems in ornamentals are more complex than agronomic crops, so progress is much slower. In agronomic crops one crop and one plant spacing is used, but in a five acre nursery there may be as many as twenty five different plant species along with several methods of growing them.

FOUR YEAR CURRICULUM TO BE OFFERED IN FORESTRY AT CLEMSON

Plans are now being made for a four year curriculum in forestry. All the preparatory work has been completed and the administration and board of trustees has approved these plans. These plans call for financial expenditures which will have to be allotted by the State Legislature. The earliest possible date that these funds will be available is July 1, 1957. Then it will take time to provide for the necessary personnel and facilities so that the four year curriculum will meet the standards prescribed by the Accrediting Agency of the Society of American Forestrists. This is necessary to insure that the future graduates of Clemson will be equally well prepared in their professional fields as students graduating from other accredited forestry schools of the nation.

KINGAN DIVISION

Hygrade Food Products
Corporation

Orangeburg, South Carolina

THE ONLY COMPLETE
U. S. GOVERNMENT INSPECTED
MEAT PACKING PLANT
IN SOUTH CAROLINA

"Researched-Feeds for the Southeast"
at the Red and Yellow Sign of . . .



FEEDS

Research Laboratories at SPARTANBURG

Research Farm at WHITESTONE

Mills Located At
SPARTANBURG and NEWBERRY

W. B. Camp & Sons. Inc.

Bakersfield, California

and

Gaffney, South Carolina

Buckfield Plantation

Yemassee, South Carolina

The Men Who Guide Us

LAWRENCE V. STARKEY



Prof. Lawrence Vincent Starkey, better known as "chief", came to Clemson in 1919 from West Virginia University where he had been extension leader of Animal Husbandry work.

Mr. Starkey was born on March 27 at Ravenwood, West Virginia. He attended West Virginia University and the University of Illinois where he received his B.S. degree in 1914. Before he graduated he taught at Terra Alta High School, at Terra Alta, West Virginia. Then after receiving his B.S. degree, he taught for one year at the Platteville Teachers' College, at Platteville, Wisconsin. Mr. Starkey did graduate work for his M.S. degree at Iowa Agricultural College and the University of Wisconsin, where he received his degree in 1917. He then returned to West Virginia as an extension leader in animal husbandry work. He stayed there until 1919, when he came to Clemson to become head of the Animal Husbandry Department. In 1930, he did some additional graduate work at the University of Wisconsin. He was head of the Animal Husbandry Department for 26 years.

He is a member of the following societies: Kiwanians, Masons, Sigma Nu, American Society of Animal Production, Association of Southern Agricultural Workers, and South Carolina Veterinary Association.

JOSEPH P. LaMASTER



Professor Joseph Paul LaMaster comes to us from the blue grass state of Kentucky. He was born on March 21, at Campbellsburg, Kentucky. He attended the University of Kentucky, where he received his B.S. degree in 1913.

Mr. LaMaster then worked at Elmendorf Farm, Lexington, Kentucky, until 1915, when he took a job with the United States Department of Agriculture, at Brookhaven and Starkeville, Mississippi. He stayed in Mississippi until 1918, when he became extension dairy specialist at the University of Georgia for one year. Mr. LaMaster was then dairy field representative of the United States Department of Agriculture in the southern states.

Mr. LaMaster came to Clemson in 1920 as an extension dairy specialist, and became head of the dairy department in October of that same year. Mr. LaMaster returned to the University of Kentucky to receive his M.S. degree in 1928.

He is a member of the following societies: American Dairy Science Association, a Fellow in the American Society for the Advancement of Science, American Society of Animal Production, Southern Association of Agricultural Workers, Southern Division A.D.S.A., Phi Kappa Phi, Alpha Tau Omega, Lamp and Cross, which is a senior honor fraternity of the University of Kentucky.

GEORGE M. ARMSTRONG



Dr. George Miller Armstrong is a well known figure in the botany department. He was born on November 13, at Appleton, S. C., and attended Clemson College where he graduated with a B.S. degree in botany in 1914.

Dr. Armstrong remained at Clemson after graduation as a research assistant until September, 1915. He then went to the University of Wisconsin where in 1917 he received his M.S. He returned to Clemson after receiving his M.S. and was an instructor in botany from 1917 to 1918. Dr. Armstrong left Clemson in 1918 and went to Auburn, Ala., where he was an Extension Pathologist until 1919. Then he attended Washington University and received his Ph.D. in 1921. He was assistant professor of botany at Washington University until 1924, when he returned to South Carolina as Head of the Division of Boll Weevil Control at the Pee Dee Experiment Station located at Florence, S. C.

In July, 1928, Dr. Armstrong was called back to Clemson to become head of the Department of Botany and Bacteriology. Dr. Armstrong was head of this department for 28 years.

He is a member of the following societies; A.A.A.S., American Society of Plant Physiology, American Phytopathological Society, Botany Society of America, South Carolina
(Continued on page 14)

Why Grow Dwarfs?

Gene Stembridge, Hort. '58

Dwarf fruit trees have become increasingly popular during the last several years, largely as the result of their adaptability to the small home garden. However, there have also been several recent commercial plantings of dwarf fruit trees, particularly of apples.

With the advent of dwarf trees, fruit growing has taken on a new importance in the eyes of the home gardener. On a small plot (60 x 60 feet), the weekend gardener can now grow enough fruit for an average family. Since dwarf trees need only a 12 x 12 foot spacing interval, this small plot would accommodate 15 trees. The importance of this is that several different varieties may be grown instead of the one or two varieties possible if standard sized trees were allotted the same space. It is easy to see that dwarf trees can provide a succession of all kinds of fruit throughout the summer and autumn, with a sufficient supply at all times. All the fruit would not ripen at the same time, as would be the case with one or two standard trees.

Another advantage of dwarf trees is that they are easy to care for and allow easier harvesting. Dwarfs attain a maximum height of about ten feet, thus they may be pruned, thinned, and sprayed from the ground, eliminating the need for working from a ladder. Their small size also makes it possible for them to be protected during unseasonal cold snaps by wrapping and by covers. This practice extends the northern limits of a fruit belt for the home gardener. Dwarfs come into bearing much earlier, and are also earlier maturing than are standards. They should not be allowed to bear until their third year. This rest period gives the tree a chance to develop a sturdy framework for heavier bearing later. Another attractive feature of dwarfs is that they can be trained on a trellis or wall as ornamentals.

Dwarf trees are not without their disadvantages, but they are comparatively few. First, many dwarfs need

artificial support such as staking because their shallow root system does not always give adequate support. Second, dwarfs are not as long-lived as standards. However, with proper care, they will bear for many years. Another drawback is that some fruits are not dwarfed successfully, and that certain dwarfing rootstocks are hard to find.

Several commercial apple growers are turning to dwarfs and semi-dwarfs because of the cheaper orchard operations made possible with smaller size trees. The commercial grower can prune, thin, and harvest his dwarf apple trees at a lower cost because these operations can be carried out without any climbing or ladder work. The major fault found with commercial dwarfs is their shallow root system. This characteristic makes commercial plantings more susceptible to drought and wind damage.

Before dwarfing rootstocks were discovered, fruit trees were dwarfed by removing the taproot or bending it upward. Another method was to plant the tree with its roots in a container such as a bucket or pot so that the growth of the taproot was confined. The container was buried deep enough so that the fibrous roots could escape over the sides. The theory is that the taproots supply water, causing the tree to be large and slow to come into bearing. It follows that the fibrous roots have an opposite effect, causing the tree to develop dwarfing characteristics.

Although a few trees are still being dwarfed in this way, practically all dwarfing today is being accomplished through the use of certain rootstocks. Scientists do not think that these rootstocks dwarf the tree by limiting the water supply as did the earlier mechanical methods mentioned above. It is now believed that the dwarfing rootstock exerts an influence upon the production or translocation of growth substances (auxins), thereby causing a dwarfing effect. Since every kind of fruit has a particular rootstock which dwarfs

it best, the dwarfing of various fruits must be considered separately.

PLUMS

There are several rootstocks which have a dwarfing effect on the plum. Rootstocks from native or American plum seedlings dwarf the European and Japanese varieties. However, these combinations are not completely compatible, and a weak union usually results. The danger of wind breakage at the union can be overcome by staking the trees to give them additional support.

Bessey or Western Sand Cherry seedlings are the source of a good dwarfing rootstock for Japanese plums, but they have been found to be incompatible with European varieties. The most important rootstock used to dwarf plums is Saint Julian C plum rootstock. It is the only dwarfing rootstock which is completely compatible with European plums. Saint Julian C rootstocks is hard to propagate in the nursery, and, as a result, there is always a shortage of this rootstock.

PEACHES

Peach trees are naturally small, therefore there is little demand for a dwarf tree. But when the fruit grower wishes to train his tree to some special form as an ornamental, a dwarf is essential.

Two of the rootstocks which dwarf plums, namely Saint Julian C and Western Sand cherry rootstocks, also have a dwarfing effect on peaches. The Western Sand Cherry is the more dwarfing of the two rootstocks. The Beach Plum has been reported to be a satisfactory dwarfing rootstock for peaches, but there has been some disagreement about its compatibility with peaches. It is not recommended at the present.

APRICOTS

There is much confusion about satisfactory rootstocks. Several authorities recommend Saint Julian C, but some growers report losing a high percentage of their trees when apricots were grafted on this rootstock. The native American plum rootstock reduces the size of apricot trees somewhat, but it cannot be considered as a dwarfing rootstock.

Perhaps the only satisfactory apricot is a double-worked tree. Western Sand Cherry is used for the rootstock. The intermediate or "middle" wood is native plum, and the apricot is grafted on the plum.

(Continued on page 16)

Etiwan Fertilizer Co.

CHARLESTON, SOUTH CAROLINA

Independent - Prompt - Reliable

— Manufacturers Of —

DEPENDABLE FERTILIZERS SINCE 1868

DAN'S

For the BEST in
Hamburgers and all
types of Sandwiches



CLEMSON
SOUTH CAROLINA

L. C. MARTIN
DRUG COMPANY



Clemson,
South Carolina

Chemically Green Winter Lawns

W. C. Dailey, Agron. '58

Yes, all you do is spray it on and forget it. It is called a miracle substance. It performs a miracle on lawns which aren't ordinarily green during the winter by giving them a lasting green color which doesn't fade during the entire winter. Only one application is necessary and best of all — you get an emerald green lawn all winter long—and a better summer lawn come summer.

It is called Winterlawn Concentrate. It is actually a dyeing agent, therefore it takes no nutrition out of the soil. It requires no grass cutting, no watering, and is economical.

Here is part of what Mr. J. Winston Neely of Hartsville, S. C., had to say to Mr. E. C. Turner of the Extension Service about winterlawn grass spray.

"We applied the material as per directions . . . on Zoysia matrella. There was a heavy growth of grass but we got a very good coverage. A few days after the spray was applied, we had a heavy rain, but there was no evidence of leaching. Many interested people saw the sprayed grass, and everyone agreed that the material was practical. Some thought

that a slightly darker green would look more natural.

"The sprayed grass held its color until the natural green from new growth appeared in the spring . . . There was absolutely no damage from using the color and shortly after growth started in the spring, the colored area and the surrounding area looked exactly alike. We are satisfied with the color . . . and plan to spray our entire lawn this fall . . ."

This is the same material that was recently used on the turf in the football stadium here for Clemson's Homecoming. Some people made the comment that it didn't last. Well, the grass itself didn't last, therefore only the bare ground was left shining. Several people in the Clemson area is giving it a more thorough testing this winter.

And ladies—no trace of color escapes. You can walk right through the grass after it has been sprayed and no trace of color will soil your shoes. Children can play on it—it's absolutely safe.

To apply, stir the liquid winterlawn concentrate thoroughly and

mix one part with five parts clear tap water, and stir again. Use it in a hand or power type spray after you have adjusted the nozzle for a fine mist. One gallon of the diluted spray should cover approximately 300 square feet.

The grass must be in the dormant stage after killing frost before spraying. The grass must be dry. The grass must also have two (2) hours drying time before being wet if coverage is to be satisfactory. You should before application, mow and rake the grass and remove all trash such as leaves, twigs, etc., if best results are to be obtained.

GEORGE M. ARMSTRONG

(Continued from page 11)

Academy of Science, Acacia, Phi Kappa Phi, and Alpha Zeta. He has served as Chairman of the Southern Section American Phytopath Society, Chairman Cotton Diseases Council, Chairman Tobacco Workers Conference, and President of the South Carolina Academy of Science.

CLEMSON SODA SHOP

and

BUS STATION

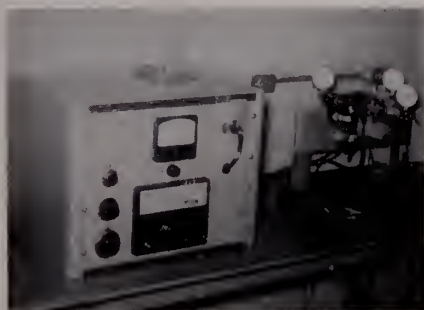
Phone 5220



SOIL TESTING

(Continued from page 3)

When sending in soil samples, for testing, the farmer should take the samples according to printed instructions found on the soil carton. These cartons may be obtained free of charge at any County Agent's office in the State. For identification of samples, the sample carton has space provided for the sender's name, address, and field number. The sender of the soil samples is also requested to fill out an information blank listing the case history of the areas sampled as regard to crops to be grown, and any known problems existing on these areas. This case history is quite necessary for the soil specialist when reviewing the soil test report and making written recommendations to the farmer concerning his lime and fertilizer requirements. The soil test report and recommendations go to the farmer direct or to the agricultural agency assisting him with his soil problems on location.



The flame photometer is a sensitive instrument in the determination of potassium and other basic cations.

Tests made on samples submitted to the laboratory include pH, lime requirement, phosphorus, and potassium. On special sample and conditions requiring it, tests are made for magnesium, nitrate nitrogen, and soluble salts. These tests are made in a modern laboratory by well trained technicians using facilities equivalent to those found in the better equipped soil research laboratories.

Dr. Allbritten stated, "For years various individuals have assigned a wide range of values to soil testing—from a psychological extension tool, to a single value soil management cure-all. The proper place of soil testing is doubtless near the center of these two extremes. There is good evidence that the competent use of soil tests can make a valuable contribution to the more intelligent management of the soil."

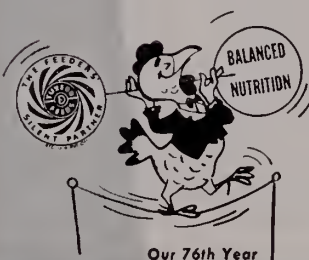
**We'd like
all AG Students
TO DO THIS...**

*just to prove
something
to themselves*

The Early & Daniel Company, makers of Tuxedo Feeds, probably advertises in your favorite farm magazine. So we'd like to ask you to do this the next time you're reading: Find one of our Tuxedo ads and read it . . . and notice the difference!

You'll find no extravagant claims in our ads of miraculous results from feeding Tuxedo Feeds. And you'll find no hysterical stress on some mysterious "Ingredient X" that will work biological miracles.

We believe realistically that it takes more than a feed for a farmer to get top results. It takes good stock to start with, and good management at the beginning, middle and end. But when you provide these first two ingredients and *then* feed Tuxedo, we know you'll get top returns for your efforts. For there just isn't a finer feed made anywhere than scientifically blended and balanced Tuxedo!



There's a Tuxedo Dealer in your neighborhood; drop in on him sometime and ask him to give you the Tuxedo quality story.

The Early & Daniel Co.
CINCINNATI 3, OHIO

TUXEDO FEEDS
For Livestock and Poultry

JUDGING TEAM

(Continued from page 7)

and then moved to Chicago, arriving about noon on Thanksgiving Day. The weather in the "Windy City" was chilly, and it took us a while to get used to it. We got our hotel rooms and then rested for a while. That night we went to the Conrad Hilton Hotel to see the ice show. Friday some of us went to the Museum of Natural History and saw the animals, birds, reptiles, and many other interesting things in the building. Friday night we went to bed early so that we could rest for the big day ahead of us. We were up

early Saturday morning because we had to be at the stockyards at eight o'clock for the contest. At the stockyards they have an enormous arena in which the exposition is held. This is where the contest between college teams in the United States and Canada is held. The contest took all day and that night I was ready for a movie to settle my nerves. Sunday at lunch they had the banquet in the Stockyards Inn, a hotel at the stockyards. There were several well known men that gave speeches, such as "Dad" Weber of Kansas State. He has judged the steer show there at

(Continued on page 16)

WHY GROW DWARFS?

(Continued from page 12)

CHERRIES

Sweet cherry varieties may be dwarfed by the use of the common Mahaleb cherry and sour cherry rootstocks. When the Mahaleb stock is used, the Mahaleb seedling should be allowed to reach a height of 26 inches before being top-worked with the sweet cherry variety. This long Mahaleb stem exerts a satisfactory dwarfing effect, whereas a short Mahaleb stem shows practically no dwarfing affect.

For sour cherries, the Stockton Morello and western Sand Cherry rootstocks may be used. Sour cherries do not unite readily with Western Sand Cherry stocks. The sour cherry tree using Stockton Morello rootstock has a great overgrowth at the union, but it is nevertheless very strong.

APPLES

Apples are the easiest fruit to dwarf. The reason for this is that superior dwarfing rootstocks have been developed, largely as the result of one experiment station—the East Malling Research Station in Kent, England. This station has developed many apple rootstocks and has assigned them the numbers by which they are known. At the present they have released a series of 16 rootstocks, Malling I through Malling XVI. These rootstocks vary from the extremely dwarfing Malling IX to the Malling XVI, which produces a tree slightly smaller than standard size. An outstanding feature of this series is that any rootstock is compatible with any variety of apples. This versatility of Malling rootstocks explains why so many commercial plantings of dwarf and semi-dwarf trees are now being made.

Some of the Malling rootstocks are superior to others, so only the most important ones will be mentioned.

Malling I produces a semi-dwarf tree about three-fourths as large as the standard size. It is adapted to dry, thin soils.

Malling II produces a semi-dwarf tree which is slightly smaller than Malling I and about two-thirds of standard size. This rootstock prefers fertile, well-drained soils.

Malling VII is even more dwarfing, producing a tree about one-half standard size. This tree reaches a height of about 10 or 12 feet.

Malling IX is the most dwarfing of

all apple rootstocks. It is about one-fourth the size of standard trees, and reaches a height of about six or eight feet. A mature tree on Malling IX stock produces about a bushel of fruit. This rootstock is the one best adapted for home gardens and trained ornamentals. It has a very limited commercial use.

Malling XII is a promising semi-dwarf rootstock which prefers wet soils. It is also adapted to early-bearing varieties.

Malling XVI produces a tree which is slightly smaller than standard size. This rootstock may become more important in the future.

In the last several years a new series of rootstocks which are superior to the Malling series have been developed. These rootstocks were developed by the John Innes Horticultural Institution at Merton, England in cooperation with the East Malling Research Station. This series has been given the name Malling-Merton (abbreviated MM), and consists of crosses between various rootstocks of the Malling series and the Northern Spy variety. Various rootstocks in this series are superior to Malling rootstocks in that they are more productive and have better anchorage. All rootstocks in the Malling-Merton series have a resistance to the wooly aphid.

There are 15 rootstocks in this series (numbered MM 101 to MM 115). The outstanding individuals in this series are discussed below.

MM 104 is a cross between Malling 11 and Northwestern Spy. Trees on this rootstock are very heavy producers and are superbly anchored. Trees are semi-dwarf size.

MM 106 is a cross between Malling 1 and Northern Spy. It is superior to Malling VII, which it most nearly resembles. It is well adapted to dry sandy soils.

MM 109 is a cross between Spy and Malling II. It is superior to ducer and is more resistant to drou Malling II in that it is a heavier producer and is more resistant to drought.

MM III is a cross between Northern Spy and Merton 793. The latter parent is a cross between Malling II and Northern Spy. MM III is comparable to Malling II in size, but it is a much heavier producer and is easier to propagate.

Since this series is comparatively new, these rootstocks are not readily available, but will undoubtedly be used extensively in the future.

Another new type of dwarf apple tree is the Clark Dwarf, which was introduced in Iowa. The Clark Dwarf is of semi-dwarf size, but it does not have a dwarfing rootstock. The ordinary standard apple rootstock is used, but a piece of Malling VIII wood is inserted between the rootstock and the scion of the desired variety. This intermediate wood gives a dwarfing effect. There has been some evidence that the Clark Dwarf is incompatible with the Stayman variety.

Another dwarfing method is the Harvest System, in which a ring of sap wood (phloem) is inverted to give the tree its dwarfing effect.

PEARS

Pears are dwarfed almost exclusively by the use of quince rootstocks. For a long time the various strains of quince rootstocks were badly mixed and hard to identify. The East Malling Research Station undertook the job of separating and naming these strains. They found three distinct types and named them Malling A, B, C. Malling A has been found to be superior to the Malling B rootstock. Malling C dwarfs the scion too severely for climatic conditions in this country.

Many varieties of pears (including) Bartlett) are incompatible with quince. This problem can be overcome by using double-worked trees. Wood from some completely compatible variety such as Beurre Hardy should be used between the quince rootstocks and the incompatible scions.

All pears on quince rootstocks have a better flavor and texture, and are larger than standard pears.

Dwarf fruit trees have a definite place in the home garden, and, in the case of apples, in the commercial orchard. At the present there are several experiment stations working to develop new and better dwarfs—the future of the dwarf fruit tree is bright.

JUDGING TEAM

(Continued from page 15)

the International for many years. Monday there was a tour of the Armour plant in store for us. They showed the assembly line for slaughtering hogs on which they slaughter 1100 hogs an hour. Tuesday morning we left for home and arrived at Clemson late Wednesday afternoon.



45% bigger at the drawbar the *instant* you pull the **TA** lever!

International® 300 Utility Tractor

Keep going in tough-going—when others shift or stall! Just pull the Torque Amplifier lever to increase drawbar pull up to 45%—on the go! You actually get more pull-power in 3rd-TA than in regular 2nd gear to keep you “barreling” ahead instead of bogging down. Just release the TA lever to resume full 3rd gear speed *instantly* when the going gets easier. This is the way you go farther on a gallon of gas . . . gain extra rounds. This is why you can plow 10 to 15% more daily with an International 300 Utility or a Farmall® 300 or 400 tractor with IH Torque Amplifier drive!

Ask your IH dealer to demonstrate the farm-easy 5! Give us an opportunity to prove that Torque Amplifier, Fast-Hitch, Hydra-Touch, independent pto and power steering save effort . . . cut farming time and costs! Ask about the IH Income Purchase Plan.



SEE YOUR

INTERNATIONAL HARVESTER DEALER

International Harvester products pay for themselves in use—McCormick Farm Equipment and Formall Tractors . . . Motor Trucks . . . Construction Equipment
General Office, Chicago 1, Illinois.

Try the Big IH Farm-Easy Five!

Torque Amplifier increases drawbar pull up to 45% on-the-go . . . gives you a shift-free choice of two speeds in each gear—10 speeds forward!

Fast-Hitch gives you Back . . . Click! . . . and Go hook-ups . . . lifts implements hydraulically . . . lets them work the way they work best!

Hydra-Touch® gives you complete hydraulic control of the biggest implements . . . demountable cylinders . . . “move and forget” controls.

Independent pto gives “separate engine” performance with pto machines. Stop pto for nonstop turns . . . start it without stopping tractor.

Power steering lets you steer with one hand . . . leaves other hand free to operate controls.

WINSTON is always good company !



R. J. REYNOLDS TOBACCO CO., WINSTON-SALEM, N.C.

Enjoy a finer filter cigarette !

The moment you touch a match to your first Winston, you'll know why it's so popular! Here's real flavor, rich and full. And here's a real filter, too — a filter that does its job so well the flavor really comes through to you. Enjoy finer filter smoking. Switch to Winston.



Switch to **WINSTON** America's best-selling, best-tasting filter cigarette!

124

7278

AGRICULTURAL REFERENCE DEPARTMENT
CLEMSON COLLEGE LIBRARY
CLEMSON, S. C.
100 CAMPUS DRIVE
CLEMSON, S. C.

The Agrarian

OFFICIAL STUDENT PUBLICATION

CLEMSON, S. C.

THE CLEMSON A & M COLLEGE

MARCH 1957



NUMBER 3
OLUME XVI

PERMIT NO. 4 — CLEMSON, S. C.
BULK RATE — U. S. POSTAGE PAID



Our Future Rests on Soil Fertility

America has grown strong largely because her people have eaten well. Eating well means living well, working well. Those are facts that some of us may overlook. A thriving agricultural-industrial system has put meat and potatoes on our tables, white shirts on our backs, soft rugs on our living room floors.

Such necessities, and niceties, come largely from the soil. A lot of us need to think of that. We need to remember that a biscuit in the hand is just so much protein and starch and fat taken out of the soil; that much of our clothing grows on cotton stalks; that sheep are only walking factories, eating weeds and grasses and grains to grow wool on their bodies; that such a flimsy thing as a paper napkin rep-

resents a mite of soil resource taken away from our national stockpile of natural resources.

If we will look upon our day-to-day living in this light, we will understand why a nation growing toward a hundred and seventy million persons makes a terrific drain upon soil resources. We will realize why it is necessary for us to maintain the soil, even while using it.

Modern farm equipment makes the application of soil conservation practices both possible and profitable. It helps to put "a future in soil fertility."



JOHN DEERE
MOLINE, ILLINOIS

Quality Farm Equipment Since 1837

THE AGRARIAN

Volume XVI The Clemson Agricultural College Number 3

Carol E. Brown
Editor

Gene Stembridge
Assistant Editor

James W. Wright
Student Photographer

Oscar R. Bishop
Business Manager

Wendell Brown
Advertising Manager

Joyce E. Cox Dept. Editor Charles Taylor News Editor
Dick Fitchett Circulation Mgr.

Departmental Writers—

Rutledge Hammond, Dixon Lee, Bobby Skelton, Bill Pressley, Jr., Heyward Ramsey, Wendel Brown, Talbert Gerald, Jack Sellers, Bill Dubose, Joseph R. Craddock, David Bruckner, Pierre Busuiocesco, Elisha G. Gravely, Allen J. Inglesby.

Advertising Staff—

Talbert Gerald, R. C. Sherrard, Joe Hall, Jr., D. A. Buckner, P. C. Cochran, Thomas Harmon, Mike Orinestein.

Circulation Staff—

John M. Howard, Don Still, Eldred Clardy, Frankin McAlhany.

Advisory Staff—

B. E. Goodale and C. M. Jones.

IN THIS ISSUE

Careers in Agriculture	page 3
Agricultural Economics	page 4
Agricultural Engineering	page 6
Agronomy	page 8
Animal Husbandry	page 10
Botany and Bacteriology	page 12
The Men Who Guide Us	page 14
Between the Furrows	page 16
Dairying	page 18
Entomology and Zoology	page 20
Horticulture	page 22
Freshman Scholarships Available	page 23
Poultry	page 24
Forestry	page 26
Pre-Veterinary	page 28
Vocational Agricultural Education	page 30

THE COVER: The silhouette of a student using a microscope— a familiar scene in all departments of the School of Agriculture. (Photo by Wright)

OUR THANKS to Mr. L. W. Riley and his staff for their help on photography.

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and sponsored by the South Carolina chapter of Alpha Zeta. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

AGRARIAN PHILOSOPHY

By Carol Brown

This issue of the Agrarian features the School of Agriculture at Clemson. Its purpose is to show the excellent opportunities offered by the field of agriculture and how one may take advantage of these opportunities at Clemson.

Everywhere we look around us we can see that many changes have taken place and certainly the field of agriculture has had its share. Agriculture actually began many thousand years ago when man settled in small groups and began to raise a few plants and animals. His animals were those he could domesticate and his plants were growing wild. From this humble beginning agriculture has become one of the most important scientific fields. One who chooses an agricultural field will find that he will study such things as chemistry, physics, genetics, botany, pathology, math, statistics, and even the atomic theory. Agriculture is now and will remain a highly specialized field.

A special item of interest is that there is no need to have a farm waiting back home to make the study of agriculture worthwhile. Statistics for 1950 show that of all agricultural workers only 11.9% are actually working on the farm. Thus those who do not have farms of their own can also find a secure future in agriculture.

All this can add up to only one thing; agriculture is an interesting and challenging field of work which offers many opportunities and a secure future to anyone who is interested. I am glad that I have invested my future in agriculture.

The Agrarian wishes to express its thanks to everyone who assisted in publishing this issue. It takes a lot of time to put out a magazine and time is especially valuable to the student who never seems to have enough of it.

Since the next issue will be published by next year's incoming staff this will be the last issue that many of us will be working on. It feels strange to know that school life is over and now we have the whole world to face instead of the face of a friendly professor. However, we have no regrets because although we have worked hard and the hours have been long it's been fun.

SERVING THE FARMERS
IN NORTH AND SOUTH
CAROLINA SINCE 1906



Planters
Fertilizer & Phosphate Co.

CHARLESTON, S. C.

CHARLOTTE, N. C.

Agriculture is a science, a business, an industry! Not many people realize that agriculture provides more jobs in the city than on the farm . . . more jobs and careers than any other industry.

To achieve maximum success in any type of work, a person must sight his target and aim carefully. But agriculture offers a broad target. If agriculture is chosen, it is hard to miss!

Many people feel they know all about agriculture. If they live on the farm, they know agriculture as the farmer knows it. If they live in a city, agriculture probably means fruits and vegetables at the grocery store or exhibits at the county fair. Agriculture is much more than that. It is the basic industry of the nation!

There are more than 500 types of occupations in the eight major areas of employment for college agricultural graduates. Recent studies show



Dr. J. W. Jones

that the eight areas would employ 15,000 new graduates each year. At the present time our land-grant colleges, such as Clemson, are graduating about 8,000 each year in agricultural sciences . . . 8,000 trained persons to fill 15,000 jobs, or about two futures for every graduate.

Some of the careers in each of the eight areas of employment are given below:

Research—work with the Agricultural Experiment Stations, the United States Department of Agriculture and other agencies in the fields of farm production, processing, marketing, and agricultural engineering.

Education — teaching agriculture in high schools and colleges, positions with the Agricultural Extension services, and farm organizations.

Industry — employment related to meat and poultry packing, farm machinery, fertilizers and lime, pesticides and herbicides, dairying processing, food and seed processing, and feed manufacturing. **Business** — banking and credit, insurance, farm management, land appraisal, marketing, storage and warehousing, transportation, and private businesses. **Communications** — work with newspapers, magazines, publications, radio and television. **Conservation**— jobs related to the conservation of soil, water, forests, fish, and wildlife.

Agricultural Services — public services with the United States Department of Agriculture and state departments of agriculture, and private services, such as veterinarians and agricultural consultants. **Farming** — both general and specialized farm production, the most important job of all in agriculture.

Good jobs are available to graduates in many fields. An individual must make a choice! He must weigh the facts and compare the career opportunities in agriculture with those in other fields. People with city backgrounds can also succeed in many agricultural careers. Many employers hire young people with training in agriculture but not necessarily with farm backgrounds. In some colleges, the enrollment in agriculture of city boys and girls is as high as 65 percent. Boys and girls reared on a farm have a running start on a successful agricultural career. They already know a lot about farm terms and farm problems. They also know how the farmers depend upon agriculturally trained people in other fields.

Careers in Agriculture

by Dr. J. W. Jones

Director of Agricultural Teaching

Most young people are also interested in dollars when they consider their future. Surveys indicate that a college graduate can expect to earn, in his lifetime, \$72,000 more than the average high school graduate. This is a cash return of 18 times an investment of \$4,000 in college. College agricultural graduates are now receiving good salaries, too.

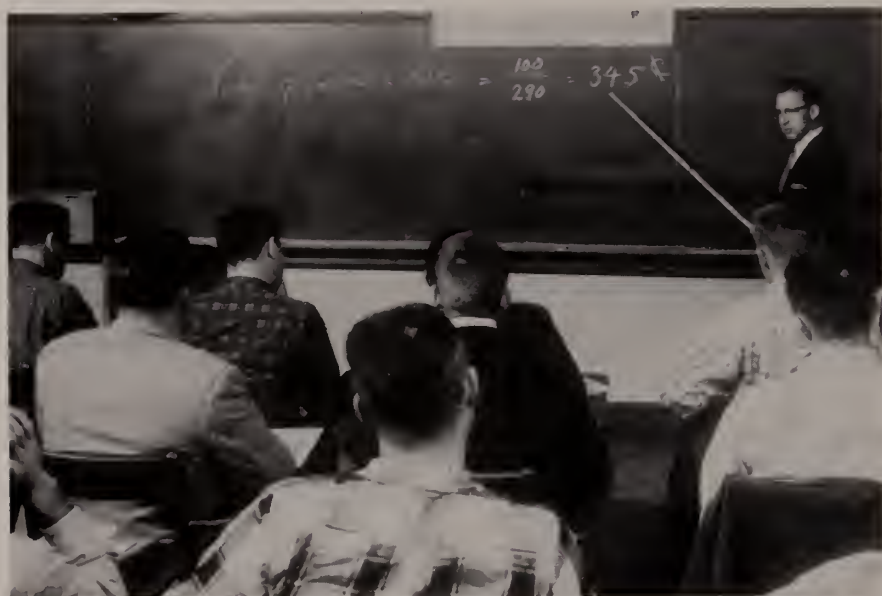
The School of Agriculture at Clemson offers college training leading to employment in the numerous occupations available to agricultural graduates. Four-year courses of study are available in Agricultural Economics, Agronomy, Animal Husbandry, Dairying, Entomology, Horticulture, Poultry, Vocational Agricultural Education, and Agricultural Engineering. The curriculum in Agricultural Engineering is jointly administered by the School of Agriculture and the School of Engineering. In addition to the four-year curricula, two-year courses of study are offered in Pre-Veterinary Medicine and Pre-Forestry. When sufficient funds become available, the forestry curriculum will be changed to a four-year course leading to a Bachelor's degree.

Clemson College has a well qualified agricultural faculty and excellent physical facilities for training young people in agriculture. The college grounds comprise 30,000 acres, including the campus, the farms, and the Experiment Station grounds. At a cost of \$3,500,000, the college recently completed two agricultural buildings and a number of greenhouses.

Further information concerning fields of study and career opportunities in agriculture may be obtained by writing to the School of Agriculture, Clemson Agricultural College, Clemson, South Carolina.

Agricultural Economics and Rural Sociology

W. B. Pressley, Jr., Ag. Ec. 1957



Agriculture Economics professor explaining how to calculate the value of the dollar.

Marketing

Management

Rural Life

The curriculum in Agricultural Economics and Rural Sociology is designed to teach students the application of economic and business principles to the problems of agriculture and of agricultural industries, and to help them to fill their places in the economic and social life of the state and nation.

The **Agricultural Economics Department** at Clemson is similar in many respects to the business administration departments or schools in the Universities. Here, however, the examples are drawn from the business of agriculture and rural life rather than from non-agricultural industries and urban society. In addition to offering a degree in Agricultural Economics the department does service work for other departments by offering courses in such subjects as statistics, taxation, con-

servation, rural sociology, community organization, etc. Many students from other departments in the School of Agriculture and from other schools in the college elect courses within the **Department of Agricultural Economics**. In turn, students majoring in Agricultural Economics may take a wide variety of courses in other Departments.

In addition to the teaching activities of the department, a broad program of research and extension is constantly being conducted by the department staff.

A student who wishes to major in Agricultural Economics will take the same two-year basic curriculum as all other agricultural majors except that he may elect to substitute a math course for a chemistry course. Among the courses required of juniors and seniors majoring in Agri-

cultural Economics, and elected by many students in other departments, are the following with a brief description of each:

Farm Management, which involves the study of the business principles underlying the organization and operation of the entire farm. Other factors such as proper balance between farm enterprises and the use of sound economic principles are considered from the viewpoint of continuous profit.

Farm Accounting, which is designed to acquaint the student with the double-entry system of bookkeeping and also to bring to his attention the advantage and necessity of keeping accurate records. A knowledge of accounting, incidentally, is essential to almost any business activity.

Public Finance, which includes the principles of financing government,

sources of public revenues, objects of public expenditures, and problems of fiscal administration. This course provides principles and facts which are beneficial to a citizen regardless of his occupation.

The courses in **Marketing** offer (1) a general survey of the field of marketing and (2) provide opportunity for detailed analysis and study of marketing agencies, functions, channels, methods, and institutions.

A relatively new but very important course recently added to the Agricultural Economics curriculum is titled **Economics of Conservation**. This course is concerned with a study of the principles and problems involved in the conservation and use of soil, water, minerals and the other natural resources.

In addition to the above courses, courses in **Statistics, Prices, Agricultural Policy, Cooperative Marketing** and several courses in the field of **Rural Sociology** are offered at the undergraduate level.

These and the many other courses required in the **Agricultural Economics curriculum** qualify a person for a very broad field of work. For example, the graduate in Agricultural Economics has sufficient working knowledge of marketing activities to qualify him for positions in agriculture and industry where marketing is involved. With his training in farm management and agricultural finance he is prepared for a career in the agricultural loan department of a commercial bank or of a government lending agency. Or, he may prefer to go into the extension service as assistant county agent or extension specialist. Or the Agricultural Economics graduate may want to go into farming either as owner or manager. In addition, his training fits him for promotion and sales work with most commercial concerns and especially with those involved in fields related to agriculture. The broad curriculum, embracing the principles of economics and business, and made available to all Agricultural Economics majors, qualifies them for operating numerous enterprises where knowledge of economic principles is an essential supplement to knowledge of the technical requirements of the business. Then, with some additional

training, they are qualified to do teaching or research work in a College such as Clemson.

The **Agricultural Economics Department** was first organized at Clemson in 1926. Prior to that time the only course offered in this field was farm management which was taught in the Agronomy Department. In 1946 a program of graduate study was initiated in the Department. Since that time 30 men have received Master of Science degrees in the Department. In a comparatively short space of time these men have established themselves in positions of high rank.

A recent survey conducted by the **Agricultural Economics Department** reveals something of the accomplishments and occupations of the more than 200 men who have graduated with a major in the Department since the first class in 1930. Analysis of the replies indicates that about 60 percent of the graduates in Agricultural Economics are employed in South Carolina. (It is interesting to note at this point that this is an exception to what seems to be the rule, for it is generally thought that over half of the graduates of South Carolina colleges leave the state to work in higher-paying areas.) Of the total graduates 14 percent are employed in the adjoining states of Georgia and North Carolina. Sixteen percent of the graduates are employed

in other Southeastern states and the remaining 10 percent are engaged in work in areas other than the South.

Based on replies to the questionnaire it appears that about one-third of the Agricultural Economic graduates are employed directly in professional Agricultural Economics work such as: (1) research work in Experiment Stations and with the United States Department of Agriculture; (2) teaching in Land Grant Colleges such as Clemson, other colleges and high schools, and (3) work with the Agricultural Extension Services. Approximately 15 percent are engaged in sales and promotional work and about 8 percent are operating their own private business or are in business partnerships. About 15 percent of the graduates are engaged in farming and related activities. The remainder are employed in miscellaneous occupations as ministers, news editors, lawyers, bankers, optometrists, personnel managers, etc.

The successful employment of Agricultural Economics graduates in a wide variety of agricultural and related occupations reflects the utility and versatility of this curriculum of basic training. Many diversified job opportunities are enjoyed by graduates in Agricultural Economics because of the well-planned and efficiently-administered course offered by the Department at Clemson.



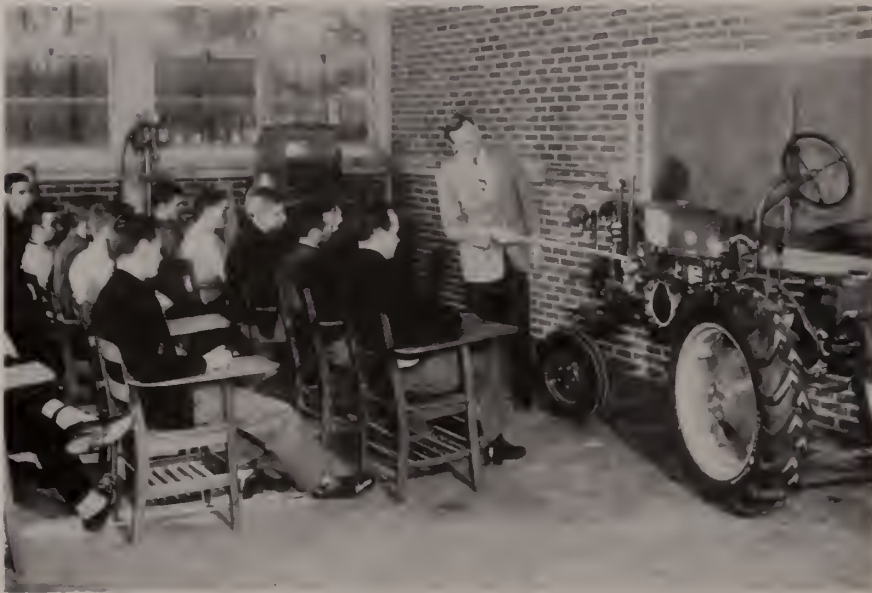
Agriculture Economics professor assisting student in a laboratory section of statistics.

Agricultural

Soil and Water Conservation

Farm Structures

By R. H. Ramsey



"What makes it tick"

It has been estimated that 85 percent of the problems of Agriculture involve Engineering. The need for men with a dual knowledge of the sciences of Agriculture and the principles of engineering to bridge the gap between Agriculture and Engineering created the profession of Agricultural Engineering. Its importance as a profession has grown by leaps and bounds as Agriculture has adapted itself to this modern age.

No longer is Agriculture in the form of a simple business, it is now a complex industry faced with labor shortages and difficult economic problems. Just as industry is concerned with the maximum productivity and efficiency from its manufacturing plants and employees, so Agriculture is concerned with its manpower and its manufacturing plants — the soil. The Agricultural

Engineer plays an important role in increasing the efficiency and productivity of the agricultural enterprises of today by applying his knowledge of mathematics, the physical sciences, and principles of engineering to this vast and complex industry.

The fields of Agricultural Engineering commonly emphasized are: farm power and machinery, soil and water conservation engineering, farm structures, electric power, and the processing of agricultural products. It is through these basic areas that agricultural enterprises are supplied with facilities, material and knowledge for more efficient operations. The engineering principles may be directly applied to the farm enterprise itself such as in the design of a more efficient and economical structure for livestock, or they may be applied indirectly to the indus-

tries that supply the farmer with agricultural necessities. Engineering principles are also applied in industries that utilize products from the farm such as the processing of feeds at a lower cost or through more efficient storage and handling of the farmer's product.

The question, "who hires Agricultural Engineers," may be asked. For many years more than one half of the number of Agricultural Engineers were in public employment. The trend now is toward a much greater employment of Agricultural Engineers by industry and other private agencies. It is believed that the future growth of the profession will be largely in the direction of commerce and industry.

In public service, Agricultural Engineers are on the staffs of agricultural colleges and their experiment stations. Most of them carry on research, investigation or extension work along with teaching. They are likewise on the staffs of other federal government agencies such as Tennessee Valley Authority, Soil Conservation Service, the Department of Interior, and the Rural Electrification Administration.

In industry, Agricultural Engineers are employed by the companies which serve Agriculture. In the farm equipment industry they develop new machines or improve old ones. They are employed by feed manufacturing plants, the electric power and equipment industries, the food processing industries and a host of other concerns that supply agricultural necessities or utilize agricultural products. They serve on the research and development, production, and sales staffs of these industries and their pay and promotions are comparable to professional engineers in other fields.

Engineering

Electric Power

Farm Power and Machinery

Agricultural Engineering '57

Another role which the Agricultural Engineer is well trained to play is that of the farmer. He is well prepared to utilize and cope with the mechanization of the modern day farm. Through his acquired knowledge of farm power and machinery, the use of electric power, irrigation, and other soil and water conservation practices, the Agricultural Engineer is able to farm more efficiently and productively.

Before deciding to become an Agricultural Engineer, one should bear in mind two main requirements. He should have a real interest in, indeed an affection for, the things of the farm—its rural environment, its people, its crops and animals, its soils and its open sky, its place in the nation as the supplier of food and fiber, and its way of life. It is best for the potential Agricultural Engineer to have had farm experience but that is not essential. Other important characteristics of the potential engineer are an aptitude for mathematics and the ability to properly use the English Language.

The Department of Agricultural Engineering at Clemson has the largest number of students enrolled in its curriculum of all the institutions offering this degree in the southeastern area and ranks very close to the larger schools in the nation. The present undergraduate enrollment is 102. The department has been accredited by the Engineers Council for Professional Development, a nationally recognized accrediting agency for engineering curricula.

The Agricultural Engineering curriculum at Clemson comes under the joint administration of the Schools of Agriculture and Engineering. The curriculum is made up of basic courses in both agriculture and engineering. Concurrently, courses in the

humanities, as well as the physical sciences and mathematics, are integrated into the program. The advanced courses in Agricultural Engineering introduce the student to broad and specialized training in five areas by the application of basic fundamentals to practical problems. These are: Farm Power, Farm Electrification, Soil and Water Conservation Engineering, Farm Structures, and Agricultural Product Processing.

The department is housed in the Agricultural Engineering building located on the campus. It is a modern brick building and contains ample facilities for both classroom work and laboratory exercises. The equipment used is modern and up-to-date and is furnished in part by leading farm equipment manufacturers and distributors who have furnished their products for demonstration, classroom and field laboratory work, and research in the

overall Agricultural Engineering program.

Along with the building and its equipment the Agricultural Engineering Department has been assigned approximately 580 acres of the Clemson College farm lands to furnish additional facilities for teaching, research, and demonstrations.

The Department has continuously grown in size and importance in the southeastern area. The staff is adequate and well trained. They are continually trying to increase the quality of the courses taught in the undergraduate program and are presently embarked on building a graduate school program to fill the needs that industry and the public services are requiring.

The importance and need for Agricultural Engineers is growing. No other branch of Engineering reaches out in so many directions and in so many various ways.



Man-made rain — from pump to crop.

Because of our rapidly growing population, agronomy is becoming more important each year. In another 20 years it is estimated that in this country we will need 30% more food than we produce today. This extra food must come from the same acreage of cropland we now have. Because we have no frontiers of new land, we must push forward on a new kind of frontier—the frontier of scientific farming. This is our best means of increasing food and fiber production in the future. Tremendous advances are being made by putting science to work in many of the branches of agronomy such as crop fertilization, plant breeding, soil conservation, and weed control.

What is Agronomy? This is a question often asked the agronomist by the man on the street and even by farm people. The word Agronomy is important to our everyday life because it represents the science which deals with the study of our priceless heritage—the soil, and our cheapest source of food—crops. Not only is the agronomist trained in the basic principles dealing with soils and crops, but also in the application of these principles to good soil management and crop production.

A better meaning of the term agronomist may be obtained by a knowledge of the various job opportunities in this important field of study. Many opportunities are available to college agronomy graduates in agricultural research at state and federal experiment stations. Research in soils may be in such fields as fertilizers and soil fertility, soil classification, soil physics, soil chemistry, soil conservation and soil microbiology. Some of the fields of crops research are plant breeding, seed production and processing, and general field crop production including forage and pasture crops. Agronomists are also employed as promotion or sales representatives with fertilizer and seed concerns. At present many agronomists are needed by the U. S. Department of Agriculture for jobs in soil classification and survey. Jobs are available with the Soil Conservation Service as agronomist or soil scientist, and with the Federal and State Extension Service as county agent, district agent, and specialist in agronomy. Some agronomists are hired as farm managers, land appraisers and tax assessors. Because of the broad training received in a general agronomy

Agronomy

Crop Science

Soil Science

Talbert Gerald and Wendell Brown
Agronomy '57

omy course, many farm boys planning to return to the farm have taken this course in college. According to a recent survey it is estimated that about twenty percent of the graduates in agronomy at Clemson are full or part time farmers.

At Clemson the Agronomy Department includes teaching, research, and extension personnel. Unlike at many agricultural institutions the Agronomy curricula at Clemson is not divided into separate crops and soils so that agronomy students are trained in both of these fields. In addition to basic crops and soils courses in agronomy Clemson requires such courses as soil conservation, fertilizers, forage and pasture crops, advanced crop and seed laboratory, soil analysis, cotton and to-

bacco, genetics, plant breeding, soil microbiology, soil fertility, crop and soil seminar and introduction to research. Also many agriculture courses are required that are given in other departments such as agricultural engineering, botany, entomology, agricultural economics, horticulture, animal husbandry, dairy, forestry, and poultry.

The agronomy student at Clemson must also study government, literature, public speaking, social science, mathematics, chemistry, physics and other subjects needed to make a well-rounded college education. Although certain courses are required of all students in agronomy at Clemson, there is an opportunity to select many others according to the interest of the student. Not all of



Agronomy majors receiving instruction in crop and weed seed identification.

the course work is in the classroom. Clemson students spend a good deal of time in well-equipped laboratories, on experimental fields, at demonstrations, and on field trips.

The agronomy teaching and research facilities at Clemson compare favorably with any other Agronomy department in the nation. In 1955 the department at Clemson moved in the new and modern Plant and Animal Science building. This air conditioned and artificially lighted building is well equipped with laboratories for teaching crops, soils, and genetics. Research laboratories with the latest scientific equipment are available for research in all phases of agronomy. Located a short distance from the agricultural building are three large and well equipped greenhouses available to the Agronomy Department for research and teaching.

Closely associated with the Agronomy Department at Clemson are the services of soil testing, seed certification, and fertilizer inspection and analysis. Agronomy students gain much information thru visits to these agencies as well as thru visits to agronomy field experiments. Students are trained also in seed certification, seed cleaning, and seed grading by visits to the foundation seed laboratory located at the college. To assist students financially with their college education some students work part time in the soil testing laboratory or as assistants in the agronomy teaching and research programs.

The instructors in Agronomy at Clemson enjoy helping students. They are dedicated to the service of agriculture and farm people. One will find that many of them are known widely for their teaching ability and scholarly achievements.

We Agronomy students at Clemson have a club composed entirely of students majoring in Agronomy. Our organization is called the Kappa Alpha Sigma Chapter of the Student Section of the American Society of Agronomy. The purpose of this organization is to foster a spirit of cooperation and mutual helpfulness among Agronomy members and the members of the staff of the Department, to stimulate interest in the Agronomy profession among students, to correlate activities in agronomy with those in closely related fields of endeavor. Besides social activities the Club sponsors educa-



Agronomy professor using profiles of South Carolina soils to explain how soil differences may influence the use and management of soils.

tional projects. In the spring of 1956 the Club sponsored an educational trip for Agronomy students to Virginia and North Carolina and visited fertilizer manufacturing plants, cigarette factories, experiment stations, and other places of agronomic interest.

Since the organization of the Agronomy Department in 1914, near-

ly 650 Clemson men have obtained the B.S. degree in Agronomy. These Agronomy graduates are now living in many states and in several foreign countries. Fortunately for South Carolina, most of our Agronomy graduates are still within the state. A recent survey shows that Clemson Agronomy graduates as a group have been very successful.

54 YEARS OF SERVICE TO SOUTHERN AGRICULTURE



"The South's Foremost Seed Breeders"

COKER'S PEDIGREED SEED CO.

HARTSVILLE, S. C.



Write for Catalog and Prices

Animal Husbandry

Production and Management of Meat Animals

R. H. Hammond, Jr., A.H. '57



Grooming of Aberdeen-Angus bull by animal husbandry class.

Animal Husbandry is a combination of the science and art of breeding, feeding and management of beef cattle, swine, sheep and horses.

The primary objectives of the Animal Husbandry Department are (1) to train students in all phases of livestock production, (2) to conduct an aggressive research program designed to develop more efficient methods of production, and (3) to disseminate pertinent information to people interested in the various phases of Animal Husbandry.

Students majoring in Animal Husbandry have unlimited job opportunities in numerous fields such as:

Representatives of various breed associations, the Extension Service (Assistant County Agent, County Agent, Livestock Specialist), general farming, livestock farming, farm managers for general and livestock farms, feed companies (feed salesmen or plant work mixing rations), graduate study, livestock herdsmen, meat packing plants (buying livestock, supervising meat coolers, supervising meat processing, salesmen), experimental work (with colleges, U. S. Department of Agriculture, and feed and meat industries), and teaching.

The Animal Husbandry Depart-

ment has excellent facilities for the teaching program. The class rooms and offices are located in the new Plant and Animal Science Building which is completely air-conditioned. The Meats Laboratory, located in the Food Industry Building, is considered one of the most modern in the country.

There is an Aberdeen-Angus and Polled Hereford herd near the campus and both are used extensively in the teaching program. These herds give students an opportunity to observe and work with outstanding purebred cattle. The swine unit consists of Beltsville No. 1, Berkshire, Hampshire, Yorkshire and Poland China breeds of hogs. These are used in laboratory class to teach students practical pork production. There is a steer feeding operation located on the campus where students have the opportunity to observe cattle while being fattened. Within the last few years a modern sheep barn has been constructed and sheep have been purchased for teaching and research purposes.

A student majoring in Animal Husbandry spends most of the first two years studying the basic courses as Mathematics, English, Chemistry, Physics, etc. Also, during this period the students take a course in each of the other curricula in the School of Agriculture. The last two years are devoted primarily to Animal Husbandry courses with some work in supporting fields.

The courses offered in Animal Husbandry are: Types and Breeds, Feeds and Feeding, Judging, Pork Production, Horse and Sheep Production, Meats, Animal Breeding, and Seminar.

The Types and Breeds course is an introductory one which is required of all students in the School of Agriculture. This course is devoted primarily to the study of breed characteristics, principal areas of livestock production in the United States, and general production and management practices.

The course in Feeds and Feeding deals with a study of feed nutrients such as vitamins, minerals and their function in the animal body. Considerable time is devoted to figuring and balancing rations for all classes of livestock including breeding animals and animals intended for slaughter.

The three production courses (Beef, Pork and Horse and Sheep) deal with practical production problems such as care of the young, castration, sanitation, disease and parasite control, grazing and dry lot rations.

A Judging course is offered to train students to select breeding stock. Also, the selection of slaughter animals is given considerable emphasis.

In the Meats course students get considerable practical experience such as estimating dressing percentages, grading carcasses, cutting carcasses into wholesale and retail cuts and identifying retail cuts.

Students in Animal Breeding study the technical and practical application of genetics in animal improvement. Emphasis is also placed on reproduction including the organs of the reproductive tract, their functions and control.

Seminar provides the students with an opportunity to review recent research investigations. Each student reports orally to the class on topics of timely interest. These reports are taken from scientific journals and publications in which the latest research data are found.

The Animal Husbandry student organization is the Block and Bridle Club. This Club is affiliated with the National Chapter and sends two delegates to the National Convention in Chicago each year. The Club sponsors several events during the year. One is financial support of the Livestock Judging Team which participates in several inter-collegiate contests annually, and others are the Freshmen Livestock Judging Contest and the Clemson Little International. During these two events, students participate in competitive showing and judging of livestock.

For outstanding students who desire to continue their education, the Animal Husbandry Department provides a curriculum which leads to the M.S. Degree. This curriculum provides additional training in Chemistry, Statistics, advanced courses in Animal Breeding and Animal Nutrition and Research.

The various herds and sheep flock are used for research work in addition to teaching purposes. In addition to the livestock located at Clemson, there is livestock at three branch stations as follows: Edisto Experiment Station, Blackville, South



Students inspect lambs from pure bred flock located at Clemson.

Carolina (cattle), Coast Experiment Station, Summerville, South Carolina (cattle and hogs), and the Clemson College Sheep Experiment Station, Wellman Division, Johnsonville, South Carolina (sheep). Research and teaching are inseparable, since the information gathered from the research projects is used in Ani-

mal Husbandry undergraduate and graduate teaching programs.

The Extension Service functions as the disseminating agent for information going from the Experiment Station to the livestock producer. The Livestock Extension Service has the following specialists; beef cattle, swine, sheep and marketing.

"Researched-Feeds for the Southeast"
at the Red and Yellow Sign of . . .



FEEDS

Research Laboratories at SPARTANBURG

Research Farm at WHITESTONE

Mills Located At

SPARTANBURG and NEWBERRY

Botany and Bacteriology

Plant Diseases

Taxonomy

Weed Control

Plant Physiology

By Gene Stembridge

Hort. '57

Botany is a basic science which deals with plants and involves the study of the diseases, structure, classification, and physiology of plants. The Botany Department, as it is commonly known, is in reality the Department of Botany and Bacteriology. Bacteriology has been combined with Botany because it is also a study of plants, even though they are the microscopic, one-celled type.

The Botany Department does not offer a curriculum leading to a B.S. degree. Instead it serves in the capacity of a "Service Department," providing training in the basic botanical sciences to students in the Schools of Agriculture, Arts and Sciences and Engineering. Courses are offered in General Botany, as well as in more advanced fields, such as Bacteriology, a study of bacteria; Plant Pathology, which deals with the diseases of plants; Plant Physiology, a study of the plant's

life processes; and Taxonomy, which is a study of the classification of plants.

The department also offers graduate training leading to advanced degrees in Plant Pathology. The number of advanced students is small, but it is anticipated that the program will grow within the next few years.

Every agriculture major and many students in the School of Arts and Sciences will find botany courses in their curricula. Students majoring in agronomy or horticulture, which are branches of applied botany, find that their curricula may call for as many as five courses in the Botany Department. The student's first impression may be that he has an excessive number of botany courses in his curriculum, but his viewpoint will quickly change when he realizes that botany is one of the foundations of agriculture. A basic understanding of plants is the keystone to their

successful production, management, and utilization. The complete dependency of animals on green plants gives botany its importance.

Since it is a foundation of agriculture, Botany is a basic and essential part of every agriculture student's college work. The words of Thomas Jefferson still holds true:

"Botany I rank with the most valuable sciences, whether we consider its subjects as furnishing the principal subsistence of life to man and beast, delicious varieties for our tables, refreshments from our orchards, the adornment of our flower borders, shade and perfume of our groves, materials for our buildings, or medicaments for our bodies."

The Department of Botany currently has four full-time and three part-time teaching positions. The teachers were so selected that they represent specialists in the various fields of Botany. The seven full or part-time teachers include a Bacteriologist, a Microbiologist, a Taxonomist, a Physiologist, an Ecologist and two Pathologists. In addition to the teachers, the Botany Department contains twelve full time persons involved in research directed toward the control of plant diseases and weeds in South Carolina crops. Since diseases of plants are of such great economic importance in South Carolina agriculture, most of the efforts of the research staff are aimed toward their control.

The agriculture students entering Clemson are required, in their freshman year, to take General Botany. Then in their Junior year, most of them will return for a course in General Bacteriology. Those students who decide to major in one of the applied botanical sciences, such as Pre-Forestry, Horticulture or Agronomy, will take such additional courses as plant Pathology, Plant Physiology, Taxonomy



General Botany Laboratory in which students are studying the structure of a flower through use of a large scale model.

and Soil Microbiology. Dairy students are given a course in Dairy Bacteriology. Thus, as stated above, the Botany Department is a Service Department which aids in the training of students majoring in all of the various phases of Agriculture.

Many Arts and Science students are required to take General Botany and certain of them, notably the Pre-Medicine students, take one or more courses in Bacteriology. Students majoring in Civil Engineering are offered training in Sanitary Bacteriology dealing with water purification and sewage disposal.

Classes are conducted not only in the classroom, but also in laboratories, greenhouses, fields and forests. Students studying plant diseases are taken on field trips to the college farms to see diseases of cotton, corn, small grains, fruits, and vegetables. Taxonomy students are taken to areas in the vicinity of Clemson where specific plants may be studied. Training in the botanical sciences thus includes practical laboratory and field training, as well as formal classroom instruction.

There is at present a serious shortage of men trained in the various botanical sciences. Men trained in



Students in General Bacteriology laboratory transferring cultures and observing stained bacterial mounts.

these fields may enter anyone of several types of positions. Most of them go into one of the following: teaching of the botanical sciences at the college level or of biology at the high school or college level; research in the control of weeds or plant diseases or in other phases of basic or

applied botany; extension work as specialists in weed or disease control; commercial work in the development, promotion or sales of chemicals used in agricultural pest control; or in regulatory work concerned with the control of plant pests through inspections and quarantines.

Etiwan Fertilizer Co.

CHARLESTON, SOUTH CAROLINA

Independent – Prompt – Reliable

— Manufacturers Of —

DEPENDABLE FERTILIZERS SINCE 1868

The Men Who Guide Us



Professor Duane Benjamin Rosenkrans, held in high esteem by thousands of Clemson students for his instructional ability and manner of dealing with students, has been an instructor in the Botany department since August of 1913. He was born in Edgewood, Iowa, where he spent his early life. After attending upper Iowa University, where he received his A.B. degree in 1911, he was instructor of botany at N. C. State until 1913 when he came to Clemson. Mr. Rosenkrans has also worked as an agent for the U.S.D.A. Bureau of Plant Industry for five summers. While at Clemson he has written many bulletins on Forest Trees of South Carolina, articles on plant diseases, assisted in preparing a bulletin on weeds, and many weekly news articles for the Agricultural extension service. Mr. Rosenkrans is now working on a list of plants in South Carolina that have been identified. This list will include over 1700 species of plants which are classified into 150 families. This list is expected to be out around June or July.

He is a member of the Iowa Academy of Science, American Association for the Advancement of Science, Masons, American Forestry Association, and Pendleton Farmer's Society.

Mr. Rosenkrans expects to retire in June of this year and make his home at Clemson.

Professor James B. Monroe comes to us from Marion, S. C. He is a Clemson graduate and has a Master's degree from Texas A&M College. He has also done graduate work at Cornell University and the University of Chicago.

Mr. Monroe taught vocational agriculture in Texas, South Carolina and Illinois. He served as superintendent of the New Waverly Independent School District at New Waverly, Texas for eight years. At one time he was Assistant State Supervisor of Agricultural Education in the South Carolina State Department of Education.

Mr. Monroe came to Clemson in 1934 as associate professor of Education. He has served as Head of the Department of Agricultural Education for the past eight years.

In 1941 Mr. Monroe served as Special Representative in the U. S. Office of Education where he supervised shop training in the agricultural departments in Georgia, Florida, South Carolina and Alabama.

He is a member of the South Carolina State Teachers Association, State Employer's Association, State Guidance Association, American Personnel and Guidance Association, Alpha Tau Alpha, State Agricultural Teachers Association and the American Vocational Association.



James B. Monroe



Dr. Herbert Press Cooper, of the Agronomy Department, is an outstanding agricultural figure in South Carolina, the nation, and the world. Dr. Cooper was born at Ridgeway, South Carolina, and received his B.S. degree from Clemson in 1911. He then attended the University of Wisconsin where he received his M.S. degree in 1916. After teaching at Penn State College and Cornell University, he received his Ph.D. degree from the latter and became assistant professor of field crops there in 1922. In 1930 he returned to Clemson as professor of Agronomy. For a long period of time he served as Dean of the School of Agriculture and Director of the South Carolina Experiment Station.

He is a member of the following societies: Sigma Xi, Phi Kappa Phi, Alpha Zeta, Kiwanis Club, A.A.A.S., American Chemical Society, American Society of Agronomy, American Society of Plant Physiology, American Soil Science Society, and the International Soil Science Society. Dr. Cooper served as president of the American Society of Agronomy and has written and presented numerous papers before many professional organizations such as the American Society of Agronomy and the American Chemical Society. His theories of plant nutrition and the cause of bloat in cattle have been subjects of world wide discussions.

DAN'S

For the BEST in
Hamburgers and all
types of Sandwiches



CLEMSON
SOUTH CAROLINA

L. C. MARTIN
DRUG COMPANY



Clemson,
South Carolina

W. B. Camp & Sons. Inc.

Bakersfield, California

and

Gaffney, South Carolina

Buckfield Plantation

Yemassee, South Carolina



"LITTLE INTERNATIONAL"

The Block and Bridle Club is sponsoring the first annual "Clemson Little International" Livestock Show April 13 at Clemson. It will consist of a showmanship contest for college students, 4-H, FFA and freshmen (Clemson) judging contest, and also a beauty contest. This show will be the largest of its kind ever to be held in this State and is expected to draw a large attendance of interested livestock farmers, high school students and others to Clemson College on Saturday, April 13, 1957.

There will be a large number of 4-H and FFA livestock judging teams participating and a large number of nice trophies and awards will be presented to the winners in both the judging contest and to the showmanship winners in cattle, swine and sheep classes. A champion and reserve champion showman will be chosen from the class winners. Any 4-H or FFA leader throughout the State who is interested in his team competing in either the 4-H or FFA judging contest should notify J. E. Cox, President, Block and Bridle Club, Box 2355, College Station, Clemson, South Carolina.

NUTRITION FROM THE COW'S POINT OF VIEW

The howling winds of winter came,
The dried up grass was thin.
The farmer saw with troubled eyes
Bones pushing through my skin,
He called the neighbors for and near
To find out what might ail me.
The things they said and did to me
Made all my courage fail me.
At first they said I'd hollow horn
So they sawed them off you see.
And then they said I'd lost by cud
Which really puzzled me.
As I grew more frail they split my tail,
Those ill informed dear gents.
At every turn I could feel the burn
Of fiery liniments.
Then came shots and salves of every kind
With ointments strong and smelly.
But they still don't see what's killing me
Is PLAIN OLD HOLLOW BELLY.

—Author unknown

NEW BACTERIOLOGY LAB EQUIPMENT

The Bacteriology Department has recently acquired some new equipment which will be used in the identification of pollution organisms in water and milk. It may also be used for the identification of any disease causing organisms. By using this equipment the time necessary for a complete test will be reduced from three days to about 20 to 24 hours. This equipment has been the development of various research groups in the anticipation of germ warfare which might be encountered in the future.

RESEARCH ON THE BIOLOGICAL CONTROL OF SOIL BORNE PLANT DISEASES

Professor John H. Bond, Bachelor and Master's degree from the University of Louisiana, is carrying on a screening program to isolate soil microorganisms that are harmful to plant disease causing organisms. After these microorganisms are isolated they will be studied in their natural soil environment to determine their relationship with the occurrence of plant diseases in the Southeast. The results of this work will be applied in the biological control of soil borne plant diseases.

ALUMNI NEWS

Frank C. Bauknight, Agricultural Economics graduate in the class of '30 is in charge of the United States Department of Agriculture Cotton Classing Service with headquarters in Columbia, South Carolina.

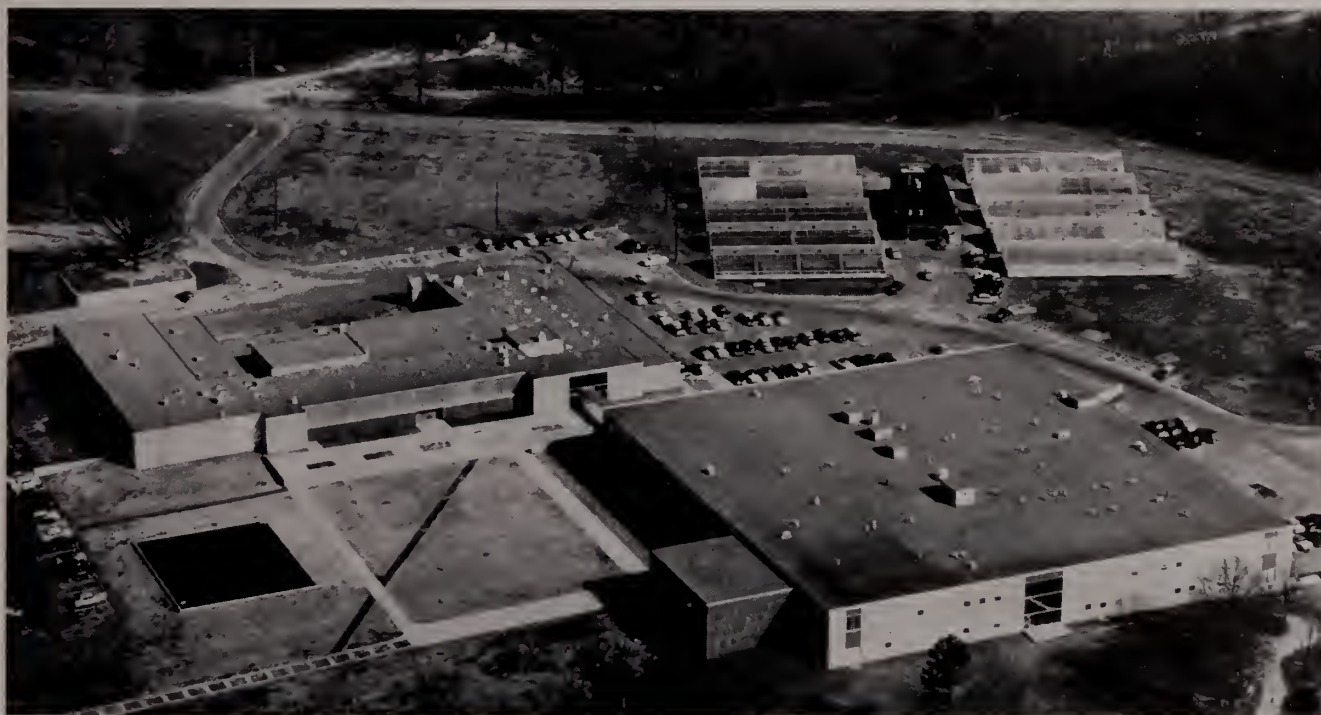
O. Romaine Smith, former basketball standout at Clemson, is youth editor for **The Progressive Farmer**, with offices in Atlanta, Georgia. Romaine is an Agricultural Economics graduate in the class of 1933.

W. S. Reasonover, Agricultural Economics graduate in 1947, is General Manager of Alaska Methodist College, Anchorage, Alaska. Bill is a former Editor of **The Tiger**.

Steve Phillips, formerly of Lancaster, S. C., has chosen the army as a career. He taught Military Science at U.C.L.A. for three years, served two years in Alaska, and is presently in command of a battalion of W.A.C's at Fort Leavenworth, Kansas. Steve is an Agricultural Economics graduate in the class of 1942.



Clemson's New Agricultural Center



Aerial view of New Agricultural Center—Two-story Plant and Animal Science Building in foreground. Food Industries Building and ten greenhouses in the background.

Two new buildings along with ten greenhouses make up the new Clemson Agricultural Center. These facilities, completed in 1955, give the state of South Carolina one of the most modern and best equipped agricultural units anywhere. The two new buildings are known as the Plant and Animal Science Building and the Food Industries Building.

The completely air-conditioned Plant and Animal Science Building furnishes classrooms, laboratory facilities, and office space for teaching, research, and extension personnel. Located on the first floor are the departments of Horticulture, Forestry, Vocational Agricultural Education, Poultry, Dairying, and agricultural divisions of the Extension Service. Also located on the first floor is an agricultural library and reading room for students and faculty.

The top floor of the Plant and Animal Science Building houses the Agronomy Department, the Animal Husbandry Department, the Fertilizer Inspection and Analysis Department, Farms, Nutrition, and Seed Certification Departments, 4-H Club offices, and Chemistry Research and Soils Testing Laboratories.

The Food Industries Building provides facilities for processing fruits and vegetables, beef and pork, and dairy and poultry products. The departments of Horticulture, Animal Husbandry Dairying, and Poultry have both teaching and research facilities in this modern building.

Adjacent to the two new buildings are ten well equipped greenhouses. These greenhouses are used by the departments of Agronomy, Horticulture, and Botany to further the research, teaching, and extension programs.

The Dairy Industry in the United States furnishes employment for 23,-600,000 people or about one-seventh of the total population. This industry offers a wide range of occupations. People from practically all walks of life are needed for the farm production of milk, the processing and manufacturing of milk, and the distribution of dairy products.

Located in the new Agricultural Center on the Clemson Campus, the Dairy Department has modern laboratories and a well-equipped milk processing and manufacturing plant for teaching and research.

The large dairy herd operation, located near the campus, provides students and the staff with complete facilities for studying modern trends in dairy cattle feeding, breeding and management.

The Dairy Department curriculum in dairy science and technology is designed to equip young people for leadership in an industry with a gross income of over five and one-half billion dollars per year. This curriculum provides training in the science and in the practical phases of dairying. A brief description of these fields of study is presented to acquaint the prospective college student with an idea of the knowledge and opportunities available to a student taking major work in the Dairy Department.

Bacteriology—

Bacteriology is a biological science dealing with bacteria, viruses, yeasts, molds and protozoa. The controlled growth and chemical activity of micro-organisms have infinite practical applications in agriculture and industry.

Dairying is so closely concerned with bacteriology that it has become a part of the dairy curriculum in most agricultural colleges. An opportunity for students to observe and participate in various phases of this work is afforded through laboratory assignments and undergraduate research projects.

Chemistry—

Milk contains fats, carbohydrates, proteins, vitamins, minerals and enzymes in addition to water. This diversified composition means that the scope of dairy chemistry must necessarily include the fields of organic, inorganic and biochemistry. Without dairy chemistry it would be impossible to understand the pro-

Dairying

Production and Manufacture

By Dixon Lee, Dairy '57



The Milk Processing Plant used for teaching and research.

cesses through which dairy products are manufactured. Many of the defects that appear in dairy products can be prevented through the knowledge of dairy chemistry.

Advertising and Marketing—

This course presents the field of advertising from the standpoint of development, economics and functions, truth in advertising, channels of trade and research with the product and of the markets.

A study is made of present-action advertising, types of appeals, copy writing, trade marks, slogans, and of all media used in advertising. The operational side of advertising is presented through discussions and lectures concerning advertising agencies, selection of medium, advertising campaigns, testing advertising, and by working with dealers.

Nutrition—

Modern nutrition includes the balancing and using of amino acids, minerals, vitamins, antibiotics, and hormones. Animal nutrition is included in the dairy course to provide a basic understanding of the chemistry and physiology of digestion, absorption, and metabolism of car-

bohydrates, fats, proteins, minerals, vitamins, and feed additives by farm animals. Methods of measuring the utilization of feed nutrients and requirements for maintenance, growth, reproduction, and lactation are studied in relation to the physiological requirements.

Physiology—

Physiology is a science dealing with the normal vital processes of living things. The application to dairying is carried out by both teaching and research in the Clemson Dairy Department.

In teaching, there are two courses offered on the undergraduate level: one, in the artificial insemination of farm animals, and the other in endocrinology. The artificial insemination course gives both a theoretical and practical background in a field which has done much to improve the quality of dairy cattle in South Carolina in recent years. Endocrinology, a study of the ductless glands, gives the student a fundamental background in growth, reproduction, and lactation.

Genetics—

Genetics is the biological science which deals with the inheritance of

plants and animals. The laws governing the transmission of characters from parent to offspring provide the basis for the resemblances and differences among individuals related by descent.

A knowledge of the principles of genetics is the basis for using systems of breeding plants and animals to obtain more favorable combinations of inherited factors in the offspring. Inbreeding and crossbreeding produced hybrid corn. The crossbreeding of family lines in purebreds and the alternation of the breed of the bull used for the generations are systems of breeding dairy cattle available for student training and for research at the student and staff levels.

Operations and Management—

The production of milk on the farm is a manufacturing operation with the dairy cow serving as the machine for converting the raw material, feed, into the finished product, milk. The dairy farmer is the manager of this operation. The dairy processing plant requires milk as the raw material. Modern, sanitary equipment provides for a continuous flow of the milk through many processes whereby it is received, pas-



The Dairy Cattle Center used for teaching and research.

teurized, cooled and bottled in one operation.

The successful management of a manufacturing plant requires the coordination of a series of operations according to a definite plan. The raw materials must be assembled and stored conveniently for process-

ing in a regulated movement. The selling of the finished product is organized to meet the production schedule.

Students graduating with a dairy major at Clemson have a choice of either manufacturing or production as their field of work.

We Congratulate the Dairy Farming DIVISION OF THE CLEMSON SCHOOL OF AGRICULTURE

You are doing an excellent job in assisting the dairy farmers of South Carolina to produce profitably a fine quality milk. We, at Coburg, appreciate your cooperation in our efforts to provide a ready market for the milk produced on these modern farms.



Charleston • Orangeburg • Georgetown • Walterboro • Beaufort

Entomology and Zoology

Insect Identification

Insect Control

By W. P. Dubose, Jr.,
Ent. '57

The Department of Entomology and Zoology has maintained the leadership in teaching, research and extension phases of entomology in the State of South Carolina for more than 42 years. This department has supplied the necessary fundamental courses and leadership in the fields of zoology and wildlife management for students attending Clemson College.

Clemson Agricultural College is

the only institution in South Carolina offering a degree in the field of entomology. This field has been in the curriculum of the college since the college opened in 1893; however, it was not until 1899 that a division of entomology came into being. In 1914 the division began offering a major in entomology and has done so since, awarding approximately 140 B.S. degrees and awarding eight M.S. degrees since 1953 when the

Students cage boll weevils on dusted cotton plants at the insectory.

department began to offer advanced degrees in entomology. Recently, this department has been granted approval to offer a Ph.D. degree.

In addition to the instruction in entomology that is offered at the college, the department participates in an off-campus instructional program.

The courses in entomology offered at Clemson include taxonomy, morphology, medical entomology, economic entomology, and bee culture. A reference collection of more than 100,000 specimens of insects is available to advanced undergraduate and graduate students. The natural conditions surrounding Clemson lends opportunity to conduct original research and practice in entomological techniques.

Insects cost the people of South Carolina several millions of dollars annually, for insects compete with people for food, shelter, fiber for clothing, and life itself. Realizing this importance of insects to the economy of South Carolina, experiments and observations on insects were begun in South Carolina by the State Agricultural Experiment Station as early as 1888.

Research in entomology is being conducted at the main station at Clemson and at all the branch stations except one.

Extension entomology plays an important role in the program. Extension entomologists of this state carry the findings of the research workers to the farmers.



Students receiving instruction in beginning Zoology Laboratory.

An undergraduate (B.S.) degree in zoology is not offered by the college, although this subject has been offered since the college was established. However, in 1952, the Entomology and Zoology Department began to offer graduate work toward a master's degree in zoology, awarding six M.S. degrees in zoology since that date. Among the courses offered in zoology are: general and advanced zoology, embryology, parasitology, and diseases of animals.

Realizing the opportunities afforded by the extensive land areas surrounding the college, the department presented a four year curriculum in wildlife management which was approved in 1955. Due to insufficient funds and personnel, this curriculum has not been put into effect. It is anticipated that this curriculum will be offered in the very near future.

What is entomology? What does an entomologist do? What are the opportunities for the graduate in entomology?

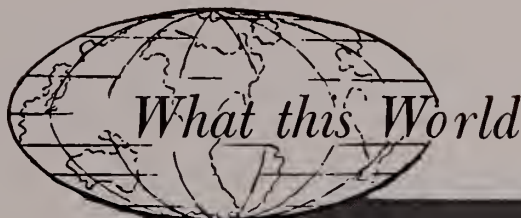
Has it ever occurred to you that entomology is one of the most interesting and important of all the biological sciences? Chances are you have never thought about it before.

Entomology is the science which deals with insects. Insects affect man's welfare and his pocketbook in many ways.

For many people entomology is a fascinating hobby or an intensely interesting study. Some collect insects such as butterflies, moths, or beetles. Others spend much time observing the habits and behavior of insects and their relatives. For some 4,500 men and women in the United States; however, entomology is also a profession. Some entomologists teach, some conduct research, some enforce quarantine rules, some sell insecticides, and others furnish pest control services.

The greatest number of professional entomologists work in some branch of economic or applied entomology which deals with the study of insects in relation to man and his welfare. The ultimate goal is to control the numbers of insects; to decrease the harmful and increase the beneficial species.

Of the 4,500 professional entomologists, 32 per cent work for the U. S. Department of Agriculture; 10 per cent for other Federal agencies; and



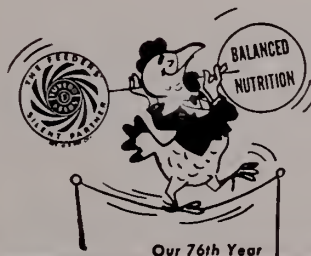
NEEDS MOST...?

One sure answer is that we need all the *good* farmers we can get . . . the kind you AG students are now learning to become.

Who was it said, "As the farms go, so goes the nation"? Well, if he didn't, he should have. No one, and no village or nation, for that matter, can live without the meat, grains and staples productive farmers provide.

To produce good, healthy fowls and animals . . . profitable and quality livestock . . . you need quality feeds, Tuxedo Feeds with balanced nutrition. It's as simple as that, and as easy as spelling Tuxedo.

Modern Tuxedo Feeds will help make your husbandry successful and profitable. When your future becomes reality, as it will very soon, get acquainted with the helpful Tuxedo Dealer in your neighborhood.



THE EARLY & DANIEL CO.
CINCINNATI 3, OHIO

TUXEDO FEEDS
FOR LIVESTOCK AND POULTRY

15 per cent for state colleges, universities, and experiment stations. Other employers are insecticide manufacturers, commercial pest control firms, privately endowed colleges, universities, and museum's and private research foundations.

There will always be a need for qualified entomologists. Insect problems are steadily increasing in number and complexity. Although it is impossible to say just how many positions will be open at any time, there has been a steady growth in the field, and this growth will no doubt continue. Financial rewards

to members of this profession are comparable to those enjoyed by most other scientists.

Each phase of entomology has its attraction to students with a bent toward biological sciences. The graduate of entomology has never experienced any difficulty in being placed in fields of professional entomology for the department has maintained a high standard of instruction for its students, thereby making them valuable to the profession. It is hoped that all who read this article will gain in understanding and that some will become entomologists.

Horticulture

Fruits — Vegetables — Food Preservation — Ornamentals

Bobby Skelton, Hort. '57

Horticulture is one of the several departments in the School of Agriculture at Clemson. This department works with fruits, vegetables, ornamental plants, and special crops. The Horticulture Department has a large orchard which includes peaches, pears, apples, and plums. There is a grape vineyard, a blueberry variety test plot, and many vegetable plots, as well as a greenhouse devoted to commercial floriculture, one used for plant propagation, three others used for the breeding of sweet potatoes, peppers, peas, and sesame, and a large collection of ornamental shrubs. Food preservation is included in the Horticulture program. Clemson is the only educational institution in South Carolina that provides instruction in all phases of Horticulture, including Food Preservation, Nursery Management, and Landscape Design.

The Horticulture Department is one of the oldest in the School of Agriculture. As early as 1892 there was an Assistant Horticulturist employed at Clemson to do both teaching and research. Since that time there has been an active Horticulture Department here. During the sixty-four years of teaching and research, much valuable information has been collected and distributed to the fruit and vegetable growers of this and the surrounding states.

At present the Horticulture Department has six faculty members, two of which are on full time teaching. Four are on a basis of part time teaching with research part time.



Class in commercial fruit production using air pressure outfit.

There are also three staff members who devote full time to research work.

Beginning this semester we have twenty-five students majoring in Horticulture. Many students other than Horticulture majors take courses in this department because many of these courses are related to other fields of agriculture. Since few of these classes are large, the professor has enough time to discuss with the students the problems they will have in commercial practice. Consequent-

ly, the students derive great benefit from their college work in the Horticulture Department.

Recently we have undergone a building program at Clemson, resulting in many well-designed modern buildings. Two of these are the new agriculture buildings, called "Plant and Animal Science Building," and the "Food and Industries Building". To be sure that all modern facilities were incorporated in the new agricultural buildings, a group of staff members and administrative officials were flown all over the United States to inspect modern agricultural buildings at leading schools. They returned with ideas which, when transmitted via the architect's pencil and the builder's skills, gave us one of the most modern and complete agricultural centers in the country.

The Horticulture Department occupies ten offices in the Plant and Animal Science Building. There are three horticulture students laboratories, one Landscape Drawing room, and sufficient classrooms for teaching all Horticultural courses.

Adjacent to the Plant and Animal Science Building is the Food Industries Building, housing the Horticultural Products Laboratory. In connection with the laboratory, we have six cold storage rooms which can be maintained at desired temperatures. These are used for teaching and research. In this laboratory, the students conduct actual work in food preservation and in doing this they

learn the practical aspects of processing Horticultural crops.

In the field of research, the Horticulture Department has ample acreage for all its experimental work. At the present time the department uses approximately thirty acres of land adjacent to the campus on the east side, up to one hundred acres on what is known as the Kibler Farm, and up to thirty acres on what is known as the Turkey Range. Research work with peaches, apples, pears, plums, brambles, grapes, strawberries, pecans, and ornamentals have employed most of the land adjacent to the campus and on the Kibler Farm. Experimental work with vegetables, especially peppers, okra, and sesame utilizes the Turkey Range. On the Kibler Farm, also, are plots devoted to various kinds of vegetables as well as sesame and aromatic tobacco.

The field of Horticulture accounts for eleven percent of the national farm income. Included in this are fruits, vegetables, and nursery products. Our own state is important, horticulturally speaking. South Carolina has more acres of peaches than any state in the country except California. Spartanburg county has more acres of peaches than any other county in the United States. Likewise, Barnwell county has the distinction of the highest acreage in watermelons.

The Horticulture curriculum at Clemson has been revised this past year. Now the student has a choice of two options — either Ornamentals, Horticulture or Fruits and Vegetables. Under the new program the students are allowed more hours of electives, which enables them to take the courses directly related to their chosen field.

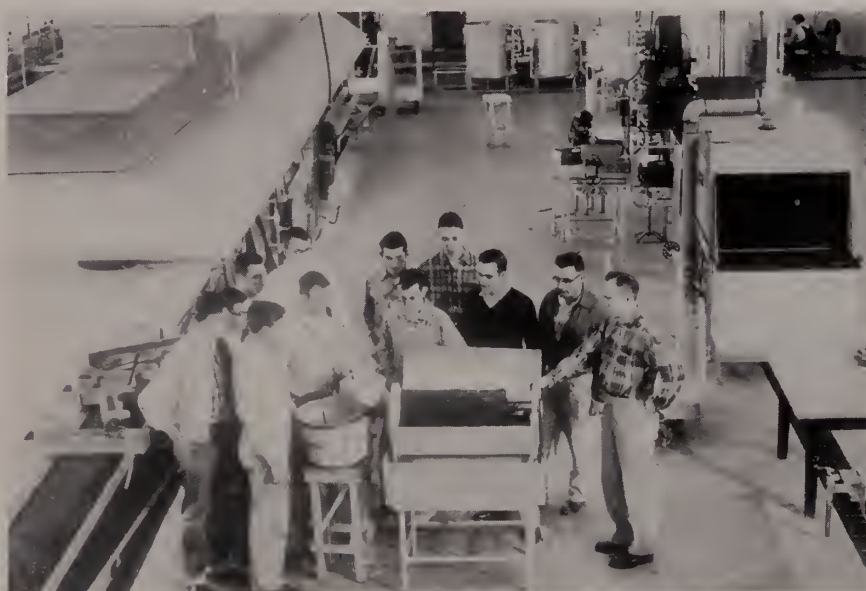
Persons trained in Horticulture qualify for many different types of jobs. Not only jobs in growing the products, but also in handling and marketing them. Industry offers many positions dealing in pest control materials, machinery, fertilizers, and other Horticulture supplies and services; and many Horticulture majors are employed to distribute and demonstrate to the commercial growers. Many graduates qualify for government service positions as food and nursery inspectors. These are only a few of the many jobs opened to Horticulturists.

The students majoring in Horticulture, have formed a club which is a member of the Collegiate Branch of the American Society for Horticultural Science. The club meets twice a month, and is fortunate in having many interesting speakers at the meetings. The club members are served some type of refreshment at each meeting, usually some product prepared by the students in the Horticulture Products Laboratory.

Every other year the School of Agriculture holds a fair. Each department stages exhibitions, demonstrating various phases of departmental work. Last year the Horticulture Club won second prize in the

contest of departmental exhibits.

Our country is increasing more rapidly in population today than ever before. An increase in population means a higher consumption of food, much of which is fruits and vegetables. An increase in population means more homes, resulting in a need for more ornamental plants. All of this points to Horticulture. More Horticultural products are used every day. The Horticulturist's job is to produce these essentials needed by our growing population. More people are needed in this field than ever before, and as long as there are people on the earth, there will be jobs for the Horticulturist.



Students observing the operation of a green pea, southern pea, and lima bean sheller in Horticultural Products Laboratory. Many other types of equipment shown in background.

Freshman Scholarships Available

Fourteen scholarships, ranging in value from \$200 to \$750 each, are available for freshmen entering the School of Agriculture at Clemson in either the summer or fall of 1957. The total value of these scholarships is in the excess of \$4,500.

Further information regarding these scholarships can be obtained by writing to the Agricultural Schol-

arship Committee at Clemson or from any high school principal, agriculture teacher, or county agent.

The deadline for mailing completed application forms is May 15, 1957. These forms may be obtained by writing to: Agricultural Scholarship Committee, School of Agriculture, Clemson College, Clemson, S. C.

Poultry

Management

Nutrition

Breeding

Marketing

Joseph R. Craddock '57

Poultry plays an important part in the agricultural economy of the United States. The income from poultry and poultry products ranks third in the United States, or 11% of the total of all agricultural products. Poultry also ranks third in South Carolina, and is exceeded in cash income only by cotton and tobacco. The gross income from poultry in South Carolina is approximately \$50,000,000 yearly. Poultry production, layers and fryers, in South Carolina does not play as an important role as in some of the Southeastern states, but in turkey production, South Carolina is third in this area following Texas and Virginia.

The poultry industry as we know it today is radically different from backyard flocks of a few decades

ago. With the increase in population and the industrial development the country over, the demand for poultry products has increased, making necessary an increase in the size of poultry flocks and specialization in the poultry industry. Poultry operations have become big business which in many phases of the industry is necessary for efficient production and success from the enterprise. Unlike livestock, poultry can be produced near the areas of consumption. At present the production of poultry meat particularly broilers is in the eastern part of the country, where the greatest consuming areas are located.

There are many job opportunities for college trained men in all phases of the poultry industry. The returns from these jobs are well in line with

those in other agricultural fields. There is a great demand for men with specialized training in the industry. The number of poultry scientists with advanced degrees as nutritionists, geneticists, and pathologists are far short of the openings available in the commercial poultry industry as well as in our agricultural colleges for teaching, research, and extension. Graduates with a B.S. degree readily find openings in sales and service work for feed companies, advertising and editorial work, technicians in hatcheries and dressing plants and in marketing services. Each of these fields require scientifically trained men.

The Poultry Department at Clemson first offered a course of major study in 1948. Like other departments in the School of Agriculture, the Poultry Department has three functions; teaching, research, and extension. The first poultry major student was graduated in 1949. Since that date a total of 27 Clemson men have been awarded the degree of B.S. in Agriculture with a poultry major. Most of these graduates are successfully engaged in the poultry industry. A general course in poultry is required of all students in the Agriculture school. Other courses are offered for poultry majors in diseases and parasites, incubation and brooding, feeding and management, poultry breeding, grading and processing, and a seminar dealing with current problems. Much time is spent in laboratory work to give the student practical training in the field.

The research program is developed around the problems of the industry of the state in breeding, feeding, management and disease control with both chickens and turkeys. One of the department's important research projects most applicable to the southeast's poultry industry is that of breeding and improvement of strains of White Plymouth Rocks and New Hampshires for meat type and reproduction by individual and family selection. The factors involved in this project include breast type, early feathering, rapid growth, high egg production, fertility, hatchability, and livability. In the White Plymouth Rocks, the establishment of the dominant white feather pattern is an additional objective. With such a large number of genetic factors involved, the establishment of a uniform strain with all of these de-



On-the-line poultry dressing.



Learning to become Poultry Nutrition Technicians. Weighing amino acid supplement for poultry rations and checking vitamin ingredients.

mediately accomplished, but both in sirable characteristics cannot be im-egg production and in meat type these stocks have been developed to a high degree. In recent comparative tests a pen of the White Plymouth Rock strain laid at the rate of 64% or an average of more than 225 eggs per hen for the year.

The extension work includes the National Poultry Improvement Plan, the National Turkey Improvement Plan, demonstrations and service work with laying flock owners broiler growers, and 4-H Club members.

The Poultry Department is provided with office space, classrooms, and technical laboratories in the

Plant and Animal Science Building. The laboratories include a general laboratory, incubation, breeding, nutrition, and a battery brooder room. The poultry disease laboratory is located in the basement of Long Hall, another of the group of agricultural buildings on the campus. A processing plant with modern on-the-line system for killing, scalding, picking, and evisceration for experimental and teaching purposes plus packaging and freezing facilities is in the Food Industries Building.

The poultry farm is located at the edge of the campus. The original plant, constructed in 1926, was a gift of Mr. Barnard M. Baruch, a well known statesman and philanthropist. The farm contains 68 acres of land, on which are service buildings, laying houses, brooder houses, range shelters, and other buildings. From two to three thousand laying hens are kept at all times for experimental purposes. Approximately 1,500 turkeys and 8,000 chicks are hatched annually for use in breeding and feeding experiments and for class work. The products of the poultry farm are used on the campus by various college institutions and in limited sales by faculty personnel.



the things that
make a great feed

RESEARCH
QUALITY INGREDIENTS
PRECISION MILLING
FARM TESTING

SECURITY Researchers are incorporating the latest nutritional developments in SECURITY Formulas and conducting exacting tests to determine the nutritional value and Quality of all the feed ingredients before they are accepted for use. The latest milling processes are used to blend these ingredients with precision. All finished feeds are analyzed both in the lab and on the farm for feeding efficiency and quality.

The things that make a great feed—you will find them in SECURITY.

SECURITY MILLS, INC.

KNOXVILLE, TENN



Clemson's Forestry Curriculum

by Elisha G. Gravely, Pre-Forestry '57

An appropriation to support a four-year curriculum in forestry at Clemson is being requested from the present session of the State Legislature. If the money is appropriated, it will mean that at long last a complete forestry curriculum will be established in the State of South Carolina.

This curriculum will represent a milestone of progress in retrospect of forestry instruction offered at Clemson from 1903 to the present date. The first forestry subject offered in our college in the foregoing year was entitled "Elements of Forestry" and consisted of a two-hour, one-term Senior lecture, the scope of which was augmented in later years to include a two-hour lecture and a 4-hour laboratory period. During this as well as many subsequent years, forestry instruction at Clemson was confined to the dissemination of elementary knowledge in fields of forest conservation, forest propagation, and lumbering. Special emphasis was placed in these courses on forest utilization topics peculiar to the South.

In 1934 when the first forester was appointed as a faculty member, the instructional program in forestry was broadened by the inauguration of a pre-forestry curriculum for the benefit of future professional foresters while the agricultural students continued to receive instruction in farm forestry. This instruction was discontinued at Clemson from 1936 to 1946. During the same decade, however, the 26,000-acre forest land area now under the jurisdiction of



Pre-Forestry students studying growth rate of yellow poplar in laboratory.

the college was acquired and developed. It is this area, located in the immediate vicinity of the campus and containing varied sites, that puts the potential academic program in forestry at Clemson into a very favorable position. The development of this land received a further impetus after 1946 when the academic program in forestry was restored and Clemson's forestry activities were augmented by the appointment of a staff member taking professional charge of the college forests. This development has been directed, as much as possible, toward making the forests of the college an outdoor laboratory to be used for the fostering

of South Carolina's forestry through research, instruction, and demonstration.

In 1956, the forestry program was relinquished by the Department of Botany and Bacteriology which, up to that year, safe-guarded the collegiate forestry interests of South Carolina. As of July 1 of the foregoing year, an independent Department of Forestry was created and enjoined with the task of further development of forestry at Clemson. It has been a long, hard grind to bring the forestry program to its present status, and much remains to be done before the planned four-year curriculum becomes a reality.

The average person does not have a clear picture of the economic importance of forests and forest products in our State. Approximately 62 per cent or about 12,000,000 acres of South Carolina is in woodlands. They are the source of raw material for the second largest industry in the State, forestry being exceeded only by the textile industry in this respect. South Carolina's forests and wood-using industries account for an annual income of \$340,000,000, the full employment of about 30,000 workers, and the major portion of income of an additional 100,000 individuals.

Of course these are all interesting facts, but what has all this to do with a forestry curriculum at Clemson? The primary reason for this course is to provide professionally-trained men for the vast number of industries as well as other agencies engaged in forestry in our State. As it now stands, these industries and agencies have to go out of the State to seek their qualified personnel. This could be a factor in discouraging new wood-using industries from coming into South Carolina. Since these industries play such an important part in our economic welfare, we should try to anticipate their establishment by providing for their personnel needs. Add to this the fact that the agricultural program at Clemson could use a good boost, and you will have a good idea why a forestry curriculum should be established at Clemson.

At present, the pre-forestry student of Clemson prepares himself to continue his studies at any forestry school in the United States. Because of the exceptional forest facilities available at Clemson, students who receive their primary training at our college are usually ahead of students who received their preliminary training at the other colleges and universities. This is an advantage that tends to off-set the disadvantages incurred in transferring from one college to another.

During his first year at Clemson, the forestry student takes the fundamental courses required of any student, such as English, algebra, surveying, chemistry, and physics. These courses serve as the background for more technical ones the student must take later. During the first Sophomore semester, the stu-

dent takes his survey forestry course known as "Introduction to Forestry," which gives the student a preliminary glimpse of the subjects which he is to study during his Junior and Senior years. This study acquaints him with the fundamentals of identifying trees, of reforesting both cleared and wooded areas, of defending the forest from fire, insects, and fungous pests, of measuring the forest crop, of harvesting this crop, and of making forest products durable and adaptable. He also gains a great deal of practical experience during the weekly three-hour laboratory periods. The second semester, he takes his first technical course, i.e., dendrology—the discipline dealing with the classification and identification of trees. This course is exceptionally good at Clemson, primarily because of the location of our school in a strategic portion of the Central Hardwoods Region. Clemson is just south of the Northern Forest Region which runs parallel to the Appalachian Mountains and just north of the Southern Forest Region. Our students can avail themselves, on or near the campus, of an enviable variety of tree species. This great variety gives the student an invaluable opportunity for study, and thereby he gains a broader knowledge of the distinguishing, silvical, and other technically important characteristics of

the different species. From the discussion it becomes clear that Clemson has at her disposal facilities that will enable her faculty to offer an excellent academic program in the field of forestry.

For those who might be interested in this proposed major, we might say that it takes a great love of the out-of-doors and stamina to become a forester. Looking on the brighter side, it should be said that the remuneration of foresters compares well with that offered in other professional fields and that there is a great demand for graduate foresters at present. There is also the fact that, as time goes by, forestry is going to become an activity of increasing importance to the people of the United States.

The shortage of wood products is now being felt more strongly than ever before. The spirit of forest conservation, lying dormant in the minds of so many people, must be brought to life. It must be made to express itself in better timber management of forest and more intensive forest practices. It is with this thought in mind that the School of Agriculture of Clemson College, with the full cooperation of the Board of Trustees, is trying to bring a full-fledged forestry curriculum to Clemson.



Field instruction in dendrology.

Pre-Veterinary

by Pierre Busuiocesco, Pre-Vet '59

Nine years ago the need for veterinarians in the South was such that the five southern schools of veterinary medicine; Alabama Polytechnic Institute, Texas A & M College, Tuskegee Institute, University of Georgia, and Oklahoma A & M College; were unable to train the number of men necessary to provide adequate veterinary services. To facilitate and promote veterinary education fourteen Southern States, South Carolina among them, inaugurated a program of interstate cooperation under provisions of the Southern Regional Education Compact of 1948. According to this program, which is still in operation, the participating states are allowed to send a quota of veterinary students, who have met all entrance requirements, annually to one of the established schools. For each student enrolled in the school of veterinary medicine an annual subsidy of \$1,000.00 is paid by the state to the school of veterinary medicine. The students are relieved of any out-of-state tuition fees. This has proved to be a very beneficial plan as the states that did not have educational facilities for training veterinarians can now have them trained at a relatively low cost.

South Carolina is allowed a quota of seven candidates yearly who attend a four year professional course in veterinary medicine at the University of Georgia. The entrance requirements are many and may be divided into three phases; a two-year pre-veterinary course, which is offered at Clemson, an aptitude test and a personal interview.

The Pre-Veterinary curriculum provides a general educational background with particular emphasis on science. In addition to the required general freshman and sophomore subjects such as English, mathematics, physics and history, the student is familiarized with fundamentals in organic and biochemistry, advanced zoology, poultry, dairying, animal husbandry, plant pathology, agronomy and economics. Because is keen and better - than - average

of the limited number of students accepted each year, the competition grades are advisable. However, grades are just one of the factors which ultimately decide the acceptance of a student. In the second semester of his sophomore year the applicant is required to take an aptitude test, designed to evaluate his general knowledge and his ability to understand unfamiliar material. He then becomes eligible for a personal interview given at Clemson by a committee from the School of Veterinary Medicine, University of Georgia. Grades, aptitude test rating and the personal interview are the factors upon which the applicant is evaluated, and which finally decide whether he is accepted. Although all of these entrance requirements may seem rather forbidding at first, statistics show that the ratio of admissions to applications in the five southern schools of veterinary medicine has increased considerably in the past eight years. In 1949 at the University of Georgia this ratio was 1:8, while in 1952 it had dropped drastically to 1:3.2. Unfortunately, more recent figures are not available at this time, but one could safe-

ly assume that the ratio was approximately the same last year, possibly lower.

Since the quotas assigned to each state in the regional plan have not changed during the period of time considered, the percent increase in admission indicates also a percent decrease in the number of applications. This is significant in that it expresses that the South is receiving more extensive and adequate veterinary service each year. While it is estimated that one hundred veterinarians are needed annually in the South as replacements for those who retire, die, or otherwise leave the profession, statistics indicate that twice that number were graduated annually in the South during the period 1949-1954. Moreover, 150 veterinarians from other regions migrated South during the same period. Yet, despite this increase in the numbers of its veterinarian population, the South in 1952 did not rank more than fairly adequate in veterinary service. South Carolina, for instance, had only one veterinarian for 685 farms.

That the South will become saturated with veterinarians is rather unlikely. Nevertheless, we must realize that the opportunities are not unlimited any longer. The present problem of the South is not to train as many veterinarians as fast as possible, but rather to improve veterinary research facilities and offer better opportunities for men interested in teaching.



Pre-Veterinary students working with balances in Agricultural



LEADING GROWERS OF MANY CROPS DEPEND ON TOXAPHENE FOR SEASON-LONG
INSECT CONTROL. FOR EXAMPLE, TOXAPHENE IS OFFICIALLY RECOMMENDED
FOR CONTROL OF MORE COTTON INSECTS THAN ANY OTHER INSECTICIDE.

Agricultural Chemicals Division
Naval Stores Department
HERCULES POWDER COMPANY
INCORPORATED
905 King Street, Wilmington 99, Del.



Vocational Agricultural Education

Teaching F. F. A. Boys, Young Farmers and Adult Farmers

By David A. Buckner
V.A.E. '57

This June, the total number of graduates in Vocational Agricultural Education from Clemson will exceed the one thousandth mark for the period since the curriculum was established in 1918 following the passing of the Smith-Hughes Act in 1917 which provided for such a program.

The curriculum for a prospective agriculture teacher is planned to cover the entire scope of his duties in the school and community in which he will teach after graduation. It includes training in all departments in the school of agriculture, a broad base in the natural and physical sciences and, general subjects as well as professional education courses.

During the first two years of the program the curriculum is the same as in most other majors in agriculture. The freshman and sophomore years include most of the courses in general culture and basic agricultural courses. In the junior year, the student begins to branch out and increase his knowledge in technical agriculture and sciences. The last semester of the senior year consists mainly of professional education courses and directed teaching. During the last six to eight weeks of the semester the student leaves the college and goes out into the state to do directed teaching. These twenty-odd training centers, distributed throughout the state, provide the senior with a period of actual teaching experience under the supervision of a com-



Students participate in Future Farmer activities.

petent agriculture teacher in the area of the state in which the student wishes to teach.

The Agricultural Education staff, headed by J. B. Monroe, consists of five men that have advanced degrees from various sections of the country. These men have had many years of both high school and college teaching experience.

Following graduation, an agricultural major can proceed to do graduate work leading to a Master's degree in Agricultural Education, or he can begin teaching and do graduate work after having experience in the field.

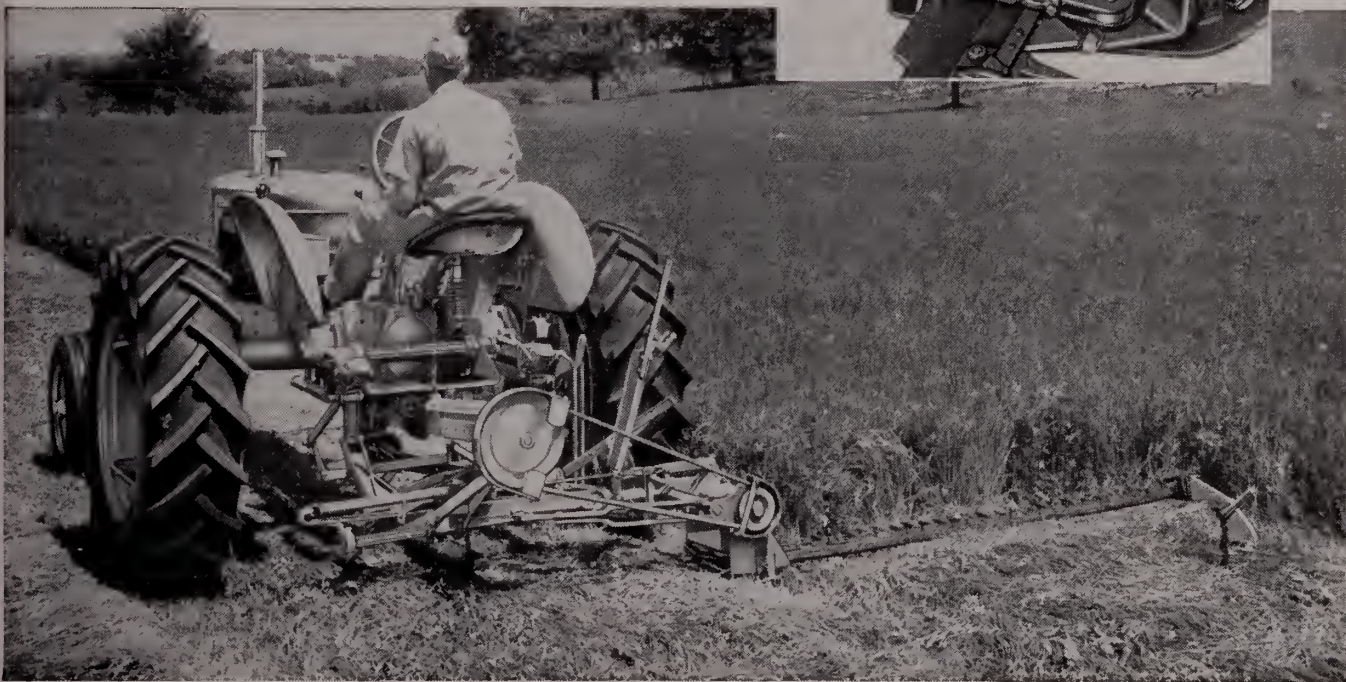
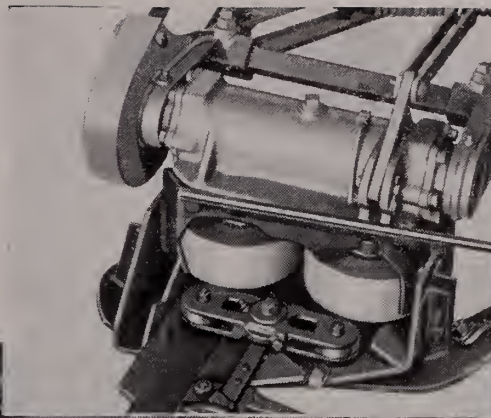
Some of the advantages of being an agriculture teacher are:

- (1) enjoyable profession
- (2) satisfactory pay
- (3) Twelve months employment
- (4) useful work
- (5) good advancement
- (6) varied activities
- (7) retirement benefits
- (8) vacation with pay
- (9) job security
- (10) community prestige

Trained Vocational Agriculture teachers are in great demand and will continue to be so. The turnover of teachers of agriculture in
(Continued on page 32)

TWIN-WHEEL drive eliminates pitman.
Heavy twin fly wheels are counter-rotating
... balance each other and sickle motion.

No. 7 MOWER — faster, easier cutting ... up to 2800 strokes per minute. Operates equally well at any cutter bar angle. Shown tractor-mounted on WD-45 with SNAP-COUPLER hitch. Pull-type also available for any tractor with standard PTO.



HERE'S MOWING THAT'S *Years Ahead*

Another Allis-Chalmers **FIRST**—the new No. 7 Mower with **TWIN-WHEEL** drive ... *a power mower without a pitman!*

With characteristic originality, Allis-Chalmers has introduced another great new advance in hay harvesting ... smooth, quiet rotary action that eliminates forever the destructive vibration always associated with pitman-drive mowers.

Cutter bar is always on same level as drive mechanism and operates smoothly at any angle ... from vertical to 45 degrees below horizontal. Available rear-mounted for Allis-Chalmers WD-45 Tractor, or in trail-type model for any tractor with standard power take-off.

Here is a mower that brings new vigor, new performance to the age-old task of mowing ... with design that's years ahead.

TWIN-WHEEL and SNAP-COUPLER are Allis-Chalmers trademarks.

ALLIS-CHALMERS, FARM EQUIPMENT DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS



LISTEN TO the National Farm and Home Hour every Saturday on your NBC radio station.

VOC. AG. EC.

(Continued from page 30)

South Carolina high schools is rather high. The demand for fully qualified teachers of agriculture has exceeded the supply since World War II. Many teachers of agriculture have become principals or superintendents. Many others enter the Extension Service, the Soil Conservation Service, and other public agricultural work. Still others engage in agricultural salesmanship and educational work of various types. A graduate of vocational agriculture is qualified to teach sciences in secondary schools as well as vocational agriculture. Many return to farming with a good background in many phases of agriculture.

A survey in 1940 of the first 410 graduates in agricultural education from Clemson College revealed that:

56% were teaching Vocational Agriculture in high schools

21% were engaged in various other fields of agricultural work

6% were teaching in fields other than agriculture

17% were in various business, pro-

fessional, and miscellaneous occupations including military service.

For boys who like agriculture and like to work with people, there is no other profession that offers the satisfaction, and provides the opportunity for service to rural people

than that of a Vocational Agriculture teacher. He is accepted in any community or town, socially and professionally. His job in the community is an important one; through his teaching he is helping mold the future of our state and nation.



Seniors in Agricultural Education get experience in teaching.

Clemson House



Fred Zink, Manager

CLEMSON, SOUTH CAROLINA

COBLE MILK *Really* TASTES *Better*

Science explains that the taste buds on the tongue lose their sensitivity with age . . . which is one reason why youngsters are very "choosy" about the taste of their milk.

The true rich, country-fresh flavor of Coble milk is **FIRST CHOICE** of thousands of children . . . at home and school—for they **KNOW** that Coble milk **ALWAYS** tastes good.

Every drop of delicious Coble milk is carefully extracted, processed and bottled with exacting, scientific care—the farm-rich goodness sealed right in. This **EXTRA** care insures extra goodness and provides lasting satisfaction for children and grown-ups, too. ✓

"ASK FOR IT AT
THE SIGN OF THE COBLE GREEN OVAL"



Now! Two big ways 1957 IH Tractors put power to better use!



... gives you **PULL-POWER** second to none!

Say goodbye to frequent shallow-ups and shiftdowns! Here's your *double-barreled* answer to tough spots—new Fast-Hitch with Traction-Control, plus Torque Amplifier! See how this great combination of "grip and go" gives new McCormick® Farmall® 350, 450, and International® 350 Utility tractors pull-power out of all proportion to rated horsepower.

IH Traction-Control Fast-Hitch gives you continuous traction that *grows with the load!* This keeps you plowing full depth when others can't.

To give your IH tractor its second wind, just pull the Torque Amplifier lever. Instantly, without shifting, TA increases drawbar pull up to 45% to keep you plowing non-stop! This surging power-punch teamed with ground-gripping traction makes you master of the toughest plowing on your farm!

Call your IH dealer . . . he'll gladly demonstrate. Feel the "grip and go" of traction that grows with the load and the power-punch of TA. Try the new 4-plow Farmall 450 . . . 3-plow Farmall 350, or International 350 Utility.

See your
INTERNATIONAL HARVESTER Dealer

International Harvester products pay for themselves in use—McCormick Farm Equipment, Farmall and International Tractors . . . Motor Trucks . . . Construction Equipment—General Office, Chicago 1, Illinois

Outplow them all with the "grip and go" of this new Farmall 450—pulling a new McCormick 4-furrow Fast-Hitch plow with individual spring trip beams.

NEW PILOT GUIDE

At a glance . . . Pilot Guide tells plowing depth and whether you have the right amount of weight transfer to match soil condition. Try "look-ahead" farming!





The taste folks take to
(*and talk about*)... **WINSTON**

You'll like the extra good taste of Winstons, too! And the way that exclusive Winston filter — *snowy-white and pure* — really lets the rich flavor come through! So, if you aren't already enjoying today's most talked-about flavor-filter combination, get yourself a pack of Winstons right now — for flavory filter smoking!

R. J. REYNOLDS TOBACCO CO., WINSTON-SALEM, N. C.

Smoke **WINSTON**...enjoy the snow-white filter in the cork-smooth tip!

CLEMSON COLLECT LIBRARY
NOTED TRANSLATION WORKS
EXACTLY COURTESY TRANSLATION

The Agrarian

OFFICIAL STUDENT PUBLICATION

CLEMSON, S. C.

THE CLEMSON A & M COLLEGE

MAY 1957



NUMBER 4
VOLUME XVI

PERMIT NO. 4 — CLEMSON, S. C.
BULK RATE — U. S. POSTAGE PAID

IT MAKES SMALL DIFFERENCE

WHAT MY *Talent* IS . . .

Perhaps I sing . . or paint . . or write . . .
Or free from stone an image I alone
Perceived before.

Or then, perhaps,
Mine is another gift . . .
The gift to teach . . to build . . or to extract
From earth and air and sun and sea
New knowledge, power, or wealth.

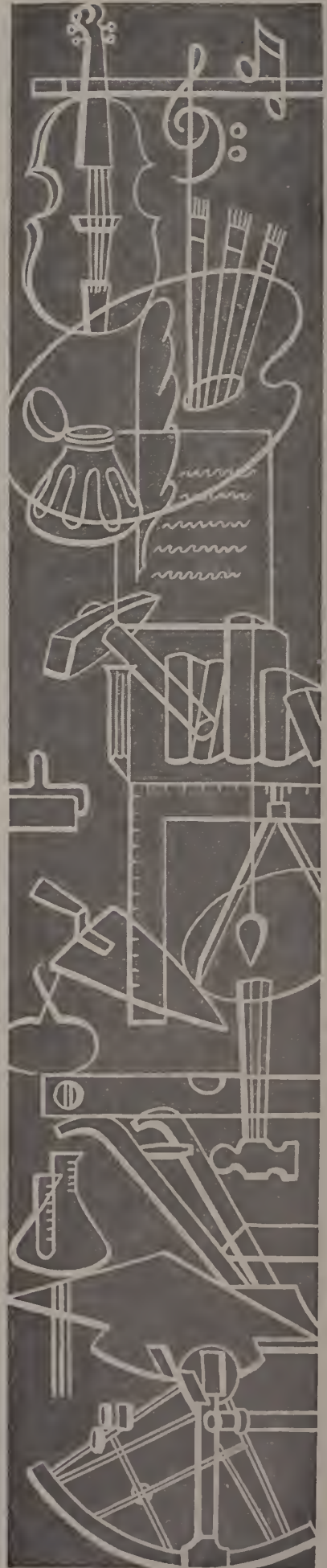
But, as I say,
It makes small difference
What my talent is . . however grand
Or humble its estate.

Let me but have, as well,
Its rare companion gift
Of wisdom.

Let me be but wise enough
To nurture talent with my toil,
And moisten it with sweat . . to swell
Its growth with diligence,
And wear its bloom with grace.

Then only will my song
Stir echo in Man's heart, and my painting
Find reflection in his eyes . . .
Then only will my written word find permanence,
And my sculpture honored place.

Finally . . .
Let me be but wise enough
To know my talent's Source,
And let me then—in gratitude—
Give all to it . . .
But more important still—however grand
Or humble its estate—
Give it to All!



JOHN DEERE • Moline, Illinois

THE AGRARIAN

Volume XVI The Clemson Agricultural College Number 4

Gene Stembridge
Editor

States McCarter
Assistant Editors

Todd Arant

Thomas S. Harmon
Advertising Manager

P. C. Cochran
Business Manager

James W. Wright
Student Photographer

George W. Powell ---- Dept. Editor John M. Howard -- Circulation Mgr.
Sammy E. Plowden --- News Editor Dick Fitchett ----- Associate Editor

Departmental Writers—

Willie L. Corley, Rutledge H. Hammond, Jr., Joyce E. Cox, Michael Orenstein, Bobby Joe Skelton, William C. Weeks, W. B. Richey.

Advertising Staff—

Rufus Sherard, Joe W. Hall, Edward C. Lee, Hugh P. McClimon, Donald Godwin.

Circulation Staff—

Eldred Clardy, Frank McAlhany, Ed Chandler, John Swartzfager, Elbert Porter, Michael Mangum.

Advisory Staff—

B. E. Goodale, C. M. Jones.

IN THIS ISSUE

Fewer Peaches—Greater Profits	page 3
The South Will Rise Again	page 4
Clemson' Little International	page 7
Between the Furores	page 8
The Men Who Guide Us	page 11

THE COVER: The cover exemplifies the increased activity on the farm at this time of year—a sure sign of spring. (Photo by Wright)

THE AGRARIAN—published in November, January, March and May by the undergraduate students in the School of Agriculture and sponsored by the South Carolina chapter of Alpha Zeta. Opinions expressed in this magazine do not necessarily reflect the policy of the School of Agriculture or Clemson College.

Advertising Rates Free on Request—

All correspondence should be addressed to The Agrarian, Clemson College, Clemson, S. C.

No article may be reprinted without permission. Subscription free on request.

AGRARIAN PHILOSOPHY

By

Gene Stembridge

What does agriculture mean to you? All too many people have the conception that agriculture is unrewarding small-time farming. They fail to realize the challenge, the complexity, and the magnitude of our nation's basic industry.

Perhaps we all take for granted this country's agricultural wealth of food and clothing. But this wealth didn't just happen—it resulted from the hard work and careful planning to develop and use the natural resources with which God has blessed this country. The work of agricultural colleges, experiment stations, and the extension service has been of primary importance in the growth of our nation and its agriculture. Without them the new varieties and breeds, and the improved methods of producing plants and animals would have been slowly discovered and even more slowly disseminated.

There is little wonder, then that the decreasing enrollment for agricultural study — and the resulting decrease of trained agricultural workers — is alarming. The enrollment in the School of Agriculture at Clemson has dropped for several years, and a reduction of ten per cent is expected for the next school year.

What is responsible for this decreased enrollment? The primary reason is the misconception of agriculture and the failure to realize the opportunities available in this field. Few prospective college students realize that agriculture is a science, or rather a combination of several basic sciences such as chemistry, mathematics, and biology. A college course in agriculture entails the application as well as the study of these basic sciences.

It is true that the agriculture graduate may start at a lower salary than other college graduates, but this gap is steadily decreasing. The starting salary does not tell the whole story, however, for there is better chance for rapid advancement in agricultural work. No one will argue that money is unimportant, but of primary importance in selecting a vocation is the individual's interests. Herein, to the person who recognizes it as a way of life and a challenge, lies agriculture's appeal.

(Continued on page 13)

SERVING THE FARMERS
IN NORTH AND SOUTH
CAROLINA SINCE 1906



Planters
Fertilizer & Phosphate Co.

CHARLESTON, S. C.

CHARLOTTE, N. C.

Fewer Peaches - Greater Profits

By Willie L. Corley, Hort. '58

Peaches, like many other fruits, produce small, poor quality fruit if all the blossoms which set fruit under normal pollination conditions are allowed to remain on the tree. If only ten per cent of the buds matured fruit, there would be a full crop. Of course, many flowers are not pollinated, and many others fall during the June drop, but an excessive amount still remain.

In years when frosts do not thin the fruit the grower is faced with the problem of thinning by hand. Hand thinning, including the use of rubber hoses and wire brushes, is costly and time consuming, and its elimination would widen the grower's margin of profit.

The application of chemical sprays for blossom and post-blossom thinning has been the goal of horticulturists for many years. Only recently, however, has the availability of satisfactory materials warranted the trial of such a practice.

The principal difficulty encountered in the use of chemical sprays is obtaining the proper degree of thinning under the variable conditions which occur each spring. Careful considerations should be given to all the natural factors which might possibly influence fruit set before any blossom thinning treatment is applied. The concentration of the chemical presents a primary problem. This is determined by the nature of the chemical used, the amount of thinning desired, the variety of peach, and the time of application. Higher concentrations are used where premium sized fruit is desired. Halehaven, Early Halehaven, and Early Elberta are varieties which are the most difficult to thin, while Golden Jubilee and Elberta peaches thin easily.

The chemical should be applied in a thorough, uniform manner as a mist spray without drenching or overlapping. The amount of material applied per tree is as important in influencing the results obtained as is the concentration used. A drenching spray of weak concentration may thin more heavily than a light application of more concentrated spray. Spraying from the top of the



Professor H. J. Sefick applying blossom spray in chemical thinning tests at Clemson.

sprayer will permit more desirable coverage than from the ground. Heavy spraying of the lower branches should be avoided, as they thin more easily.

Extensive tests involving numerous chemicals on many varieties of peaches have been conducted at experiment stations in many commercial peach growing areas in the United States and Canada. These chemicals are considered as falling into two broad groups: those used for thinning during full bloom, and those which thin best after blooming is completed.

Blossom Thinning:

The thinning of peaches with dinitro compounds may have an advantage over hand thinning and the various mechanical methods which have been developed. Several dinitro compounds, including Elgetol (dinitro-ortho-cresol), DN No. 1, and DN No. 289 were applied at full bloom in tests on Elberta trees at Cornell University. DN No. 289 was decisively the better thinner, although good results were obtained from each spray. Thinning peaches at bloom time with dinitro sprays re-

sulted in greater fruit bud hardiness the following year than did conventional hand thinning or no thinning. In some tests in Canada, high concentrations of Elgetol were required to produce moderate thinning in dry weather, but when applied before a rainy spell resulted in almost complete fruit killing and defoliation. The extreme susceptibility of peaches to dinitro injury in damp weather makes the application of dinitro compounds hazardous. These sprays should be applied the first day when nearly all the blossoms are open. Often this period is only one day. In many districts there is still danger from frost after full bloom, and the final set of fruit cannot be determined at this time. Later spraying requires higher concentrations and would likely cause more foliage injury. It is highly probable that results for any given variety would vary somewhat from year to year and from one locality to another because of differences in conditions affecting tree growth and fruit set.

Another blossom thinning material which shows promise is NPA (N-1-

(Continued on page 13)

The future looks bright for livestock in the South. Livestock production, especially cattle production, has grown tremendously in the past few years in the South and even greater strides are predicted for the future. If the expectation of full employment is realized, the demand for meat in the United States will have reached 35 billion pounds by 1975. The South is expected to increase its demand by greater proportions than are other sections.

Per capita consumption of meat in the South is expected to increase from a level of 84.7 per cent of the United States average in 1950 to 92.7 per cent by 1975. This will mean a rise in per capita consumption from 122 pounds in 1950 to 156 pounds in 1975, or an increase of 34 pounds per person.

Population predictions indicate that the South will maintain the same proportion of the country's population in 1975 as compared with 1950. Demand for meat in the South is expected to rise from an estimated 3.8 billion pounds in 1950 to 6.6 billion in 1975.

Indications are that the demand for meat in the South will continue to increase both absolutely and relatively to the nation as a whole. Further research is needed, however, in order to estimate the South's capacity and willingness to increase its livestock production to meet rising demand.

Agricultural leaders have advocated an expansion of livestock production in the South to bring about a better balanced and sounder agri-

The South Will Rise Again

By R. H. Hammond, Jr.
A. H. '57

cultural economy. The predominant pattern of farming in the South leaves a large part of the agricultural land and labor resources in a low state of productivity. Agricultural income derived from the sale of livestock and livestock products, however, is increasing.

The expansion of the livestock industry in the South on a sound basis will depend upon several factors. The future demand for meat and livestock in the United States with special emphasis on the demand of the South and the development and acceptance of improved livestock production technology are the primary factors which limit this industry.

Other important factors are the alternatives within agriculture in the region, and the interregional competition in livestock production.

Location of the present and prospective demand for meat and livestock in the United States is important from the standpoint of plan-

ning livestock production and the location of marketing and processing facilities. Expansion in the demand for meat and livestock in the South will benefit southern producers more than those in other regions, for other regions have the disadvantage of transportation costs in supplying the southern market.

A large part of the consumption of meat in the United States is represented by the urban population. The major part of any future increase in the market for meat will likely come from urban population.

The South was the only region in which the urban per capita rate of consumption was below the national average, according to a 1948 survey. Consumption of beef on this urban per capita basis was highest in the western region.

Estimates of the total demand for meat in the future depends to a great extent on the population increase. The proportion of the United States' population living in the South has not changed substantially since the turn of the century.

Per capita consumption of meat for 1975 is expected to be about 16 per cent above the 1951-53 average. Given the per capita demand for meat in the United States, the total demand is then solely dependent upon the population of the nation, which is expected to be between approximately 199 and 221 million by 1975.

The expected total demand for meat in the United States for 1975, ranges from 33.4 billion to 37.1 billion pounds, depending on the assumption of population growth. These expectations represent an increase of 41 to 57 per cent over the 23.6 billion pound average in 1951-53.

Generally speaking, this increased demand will direct more resources

(Continued on page 14)



Angus cattle grazing in a South Carolina pasture.



LEADING GROWERS OF MANY CROPS DEPEND ON TOXAPHENE FOR SEASON-LONG
INSECT CONTROL. FOR EXAMPLE, TOXAPHENE IS OFFICIALLY RECOMMENDED
FOR CONTROL OF MORE COTTON INSECTS THAN ANY OTHER INSECTICIDE.

*Agricultural Chemicals Division
Naval Stores Department*
HERCULES POWDER COMPANY
INCORPORATED
905 King Street, Wilmington 99, Del.



W. B. Camp & Sons. Inc.

Bakersfield, California
and
Gaffney, South Carolina

Buckfield Plantation

Yemassee, South Carolina

LEE'S Amoco Service Station

Most Modern Station in Clemson

CLEAN REST ROOMS

Honoring Courtesy Cards of
All Major Oil Companies

TELEPHONE 6696

TERRY BOTTLING CO.

Bottler of
Pepsi-Cola — Toms
Seven-Up



ANDERSON
and
GREENWOOD, S. C.

Clemson's Little International

By Joyce Cox, A.H. '57

Last fall, just as the first semester of the school year was getting underway, the Block and Bridle Club, Clemson's student Animal Husbandry organization, started planning a livestock show for the coming Spring. It was decided that the show would be called "The Clemson Little International". Guidance for this venture was readily supplied by the entire Animal Husbandry staff of the College of Agriculture and especially by Professor Dale Hendlin, who had prior experience with the preparation of livestock shows. Although many problems hitherto unknown presented themselves, it is generally felt that they were successfully surmounted.

The program, which ran for an entire day, included the showing of swine, the showing of sheep and the showing of cattle. These groups of livestock were divided into classes. The swine were divided into classes of barrows, gilts and boars; the sheep were divided into classes of fat lambs and ewes; and the cattle were divided into classes: Polled Hereford heifers and steers, and Aberdeen Angus heifers. The culmination of



Little International contestant judging a class of swine

these events for each group of livestock was the crowning of a Grand Champion Showman and a Reserve Showman. When these events were finished, a judging contest was held. The winner of this contest was chosen on the number of correct judges he made and also the number of correct reasons he gave for his choices.

The results of these contests run as follows. First and second places for the sheep showmanship were captured by T. S. Baker and R. H. Hammond, Jr., respectively; R. T. LeMaster and J. E. Yonce were respectively named the Champion and Reserve Champion in swine. C. P. Whitesides was named the Champion Showman in cattle, while H. T. Arant won the Reserve Champion award. When each individual champion, from each class, had been chosen, each competed to become the Grand Champion of the entire showmanship contest. R. T. LeMaster, showing a boar, was named the Grand Champion Showman while C. P. Whitesides was named the Reserve Grand Champion Showman. In the individual judging contest, C. M. Chandler was named overall Judging Champion with R. C. Sherard being named runner up.

After the showmanship contest and the individual judging contest were over, everybody took time out for lunch. At 1:00 P.M. the F. F. A., the 4-H and the College Freshman judging contests were held. These contests consisted of team judging rather than individual judging, although the top four members of each winning team received prizes in addition to the plaques that were presented to the winning team as a whole. These awards, with the ex-

(Continued on page 16)



The Little International Queen Mrs. Allan Pettigrew presents the reserve grand champion showmanship ribbon to C. P. Whitesides.



ALPHA ZETA INITIATES NEW MEMBERS

Fourteen new members were recently initiated into the South Carolina chapter of Alpha Zeta, national honorary agriculture fraternity. Alpha Zeta members are selected on the basis of their scholarship, leadership, and character.

The new members are: Wendel Brown, agronomy senior; Marvin Wall, VAE senior; Charles B. Taylor, agronomy senior; Adger Carrol, VAE senior; Talbert Gerald, agronomy senior; David Buckner, VAE senior; Jack Pruitt, horticulture senior; Michael Bosnak, entomology junior; Henry Young, agricultural engineering junior; Robert Stephens, agronomy junior; Bobby Skelton, horticulture senior; William Richey, agricultural economics junior; Harold Arant, VAE sophomore; and States McCarter, VAE sophomore.

On April 18 the following officers were elected: Gene Stembridge, Chancellor; Robert L. Stephens, Censor; Geo. W. Powell, Scribe; William B. Richey, Treasurer; and Michael Bosnak, Chronicler.

HORTICULTURE NEWS

Dr. W. L. Ogle recently became a member of the horticulture faculty. Dr. Ogle, a native of Tennessee, received his B.S. at the University of Tennessee and his M.S. and Ph.D. at the University of Maryland. He taught at the University of Rhode Island before accepting a position at Clemson. Dr. Ogle is a truck crop specialist.

At a meeting on April 16 the Horticulture Club elected its leaders for the next school year. Those elected were: Richard Reynolds, President; John Thomason, Vice President; Sammy Plowden, Secretary; and James Blackwell, Treasurer. Professor F. W. Thode is the faculty advisor.

The club recently sold the tomato plants which they had raised this Spring to finance club activities. These plants were started in the greenhouse and hardened in hotbeds which the club built.

DIRECTORS MEET

A three day meeting of directors of agricultural experiment stations and the extension service was held at the Clemson House on April 16-18. After the meeting the directors toured the agricultural center. On April 19-20 the group toured several southern counties. The directors at this meeting represented 13 southern states and Puerto Rico.

JUDGING TEAM WINS CONTEST

The Clemson Livestock Judging team recently won the Southeastern Intercollegiate Livestock Judging Contest. This contest was open to teams of thirteen southeastern states. Seventeen teams participated in this year's contest, which was held at Fayetteville, Arkansas on April 26. The contest moves to different schools each year and will be held at the University of Georgia next year.

The Clemson team left April 22 and made stops at schools and ranches along the route. They returned on April 28.

The Clemson team is composed of the following men: Hugh F. Ables, James E. Floyd, P. C. Cochran, Theodore W. Hayes, James B. Petty, Thomas N. Rogers, Frank M. Way, William C. Weeks, Bruce F. Wyatt, and James C. Yonce. Professor Dale Handlin is the coach of the Clemson team.

The contest consisted of the judging of numerous classes of livestock. These included five classes of cattle, four classes of hogs, and three classes of sheep. Oral reasons were given on eight of these classes.

Clemson men also placed high in the individual judging contest. There were 85 participants in each individual contest. James E. Floyd placed third and Hugh Ables placed eighth in over-all individual judging. Theodore Hayes was the second high man in the swine judging contest. Floyd placed fourth and James C. Yonce took sixth place in the cattle judging contest.

DAIRY NEWS

Dairy Seniors made a field trip in the excess of 1000 miles during April 10-13. The group visited dairy plants and dairy farms in Tennessee and Georgia. Professor B. E. Goodale accompanied them on the trip. The dairy seniors are B. L. Cook, M. H. Hopkins, D. D. Lee, R. A. McKellar, B. T. McDaniel, J. R. Roberts, and J. F. Scurry, Jr.

JONES ATTENDS LAND-GRANT MEET

Dr. J. W. Jones, Director of Agricultural Teaching, was one of three elected southern region representatives attending the American Land-Grant College Association meeting in Chicago, May 3-4. Dr. Jones was elected at the annual association convention in Washington, D. C., last November.



AGRICULTURAL SCHOLARSHIPS

Several Agricultural Scholarships were awarded in Honor Day exercises at Clemson on May 1.

The Danforth Fellowship is awarded to an outstanding freshman in the School of Agriculture. Michael Mangum of Spartanburg, a Pre-Forestry major, received this award, which is valued at \$50 and provides for a two weeks stay at a Leadership Camp at Shelby, Michigan.

The Sears-Roebuck Sophomore Scholarship was awarded to States M. McCarter, York, S. C. The scholarship valued at \$250 is awarded to the sophomore making the highest scholastic record as a freshman Sears-Roebuck scholar.

McCarter also received the Alpha Zeta Award, which is given annually to the Agriculture sophomore having the highest scholastic average.

A Ralston Purina scholarship was awarded to J. J. Britton from Sumter, S. C. This \$500 scholarship is awarded to a rising senior in the School of Agriculture. Britton is an Animal Husbandry major.

The Charles Carter Newman Prize in Horticulture went to Bobby Joe Skelton of Clemson, a Horticulture senior. This award amounted to \$50.

The Borden Agricultural Scholarship was awarded to Daniel Dixon Lee of Dillon, S. C., a Dairy senior. This \$300 scholarship is awarded to the senior who has the highest scholastic record while taking at least three Dairy subjects.

The Alpha Tau Alpha Scholarships Medal is awarded to the senior in Agricultural Education having the highest scholastic record. This award went to David F. Borchert of Zearing, Iowa.

The Anderson Fellowship is given annually for graduate study in the Biological Sciences. James T. Ligon of Easley, an Agricultural Engineering major, received this award.

The Coburg Dairy Scholarship amounts to \$1000 and is given in two installments of \$500 each to a Dairy major during his junior and senior years. George W. Powell of Williston, S. C., a rising senior who won this award last year, received the second \$500 installment.

The Thomas G. Clemson Prize is awarded to an Agriculture major for achievement and improvement during his college course. This prize was

won by Joyce E. Cox of Loris, S. C., an Animal Husbandry senior.

The Wall Street Journal Achievement award provides for a free subscription to the Wall Street Journal. Mason Homer Anderson of Wampee, S. C., an Agricultural Economics senior, received this award.

Scholarships for freshmen entering Clemson next fall total over \$4,500. The deadline for applications was May 15. The winners of these scholarships will not be announced until next August.

HORTICULTURE FIELD TRIP

A tour of the gardens of South Carolina was made by the members of the garden and landscape design classes on April 7-9. This trip was planned and directed by F. W. Thode, Assistant Professor of Horticulture. The students who made this trip are Bob Burgess, Dan Richards, Linnie Middleton, Carl Gambrell, Robert Dibble, and Johnny Thomason.

The group visited several private homes and many gardens. Stops were made in Orangeburg, Greenwood, and Charleston. In Charleston they visited the municipal park and zoo, Magnolia Gardens, and Cypress Gardens.

ENTOMOLOGY FIELD TRIP

On April 3 through April 6 a group of students from the Entomology Department made a field trip that practically encircled South Carolina. The group included students Harry Ryttenberg, Sam Turnipseed, Bill DuBose, and Melvin Latham, and advisor W. F. Chamberlain, Associate Professor of Entomology. The primary objective of this tour was the collection of representative insects in South Carolina.

NEW DAIRY SCHOLARSHIPS AVAILABLE

Two new Dairy Scholarships will be awarded for the first time next fall to Dairy majors.

The South Carolina Dairy Scholarships amounts to \$1000, and will be awarded to a rising Dairy junior.

The first Pauline Hanckel Dairy Scholarship is to be given by the Ladies Auxiliary of the South Carolina Dairy Association next fall. It is a \$1000 scholarship and is also awarded to a rising Dairy junior.

Etiwan Fertilizer Co.

CHARLESTON, SOUTH CAROLINA

Independent - Prompt - Reliable

— Manufacturers Of —

DEPENDABLE FERTILIZERS SINCE 1868

DAN'S

For the BEST in
Hamburgers and all
types of Sandwiches



CLEMSON
SOUTH CAROLINA

L. C. MARTIN
DRUG COMPANY



Clemson,
South Carolina

The Men Who Guide Us



Professor Robert Ritchie of the Animal Husbandry Department is a well known figure to the agricultural students at Clemson. He came to Clemson in 1926. Prof. Ritchie is a native of Iowa, and received his B.S. degree from Iowa State College in 1926. After a few years of teaching at Clemson, he returned to Iowa State College to do graduate work. He received his M. S. degree in 1938. Mr. Ritchie spent the years 1948 and 1949 in Japan with the National Resources Section, General Headquarters of the Allied Powers. His work was connected with the improvement of the Japanese livestock industry. Mr. Ritchie did much in aiding the rehabilitation of this Japanese industry.

Not only is Mr. Ritchie interested in the animal industry, but he is also an important figure in the athletic program at Clemson. Having been an athlete himself, Mr. Ritchie has done much to promote athletics here at Clemson. At the present he is Chairman of the Athletic Council of Clemson, and he is also Vice President of the Atlantic Coast Conference.

Professor Ritchie is a member of the following organizations: Alpha Zeta, Kiwanis Club, the National Block and Bridle Club, the American Society of Animal Production, and the Pendleton Farmer's Society.

Professor James M. Stepp, a native of North Carolina, is a prominent figure in the Agricultural Economics Department and is held in high esteem for his instructional ability and his interest in students. Dr. Stepp received his A.B. degree from Berea College in Kentucky in 1937. While in college, he was president of the literary society, business manager of the college yearbook, a member of the debating team, and an active member of the college glee club. Dr. Stepp received his M.A. degree from the University of Virginia in 1938. Continuing his graduate work at Virginia, he earned his Ph.D. degree in 1940.

Since joining the faculty at Clemson, Dr. Stepp has been an active advisor in student affairs. He has been Secretary-Treasurer of the Clemson Chapter of Phi Kappa Phi, Second Vice President of the Southern Economics Association, and General Superintendent of the Methodist Church School. At the present he is Vice President of the Clemson Fellowship Club, member of the Constitution Revision Committee of the Clemson College Faculty Senate.

Dr. Stepp has played a very important role in actively guiding our leaders of tomorrow through their college years.



James M. Stepp



Professor Albert Meyers Musser, Head of the Horticulture Department, was born in Hartleton, Pennsylvania. He attended Penn State and the University of Florida. After receiving his B.S. degree, he served with the U. S. Navy. In 1919 he became a County Agent in Clarendon County, and since that time has figured prominently in South Carolina's horticulture. In 1934 Mr. Musser became the Head of the Horticulture Department after serving as acting head for several years.

Mr. Musser has become famous as a specialist in fruit production, especially peaches. He has done work with peach stocks, the pruning of peach trees, and varieties of fruits and peaches. Also, Mr. Musser has conducted research on the fertilization of fruits. Professor Musser, along with two co-authors, has also found time to write a textbook which is widely used in the field of horticulture.

Mr. Musser has served as President of the South Carolina Peach Growers Association and as Chairman of the Horticulture Department of the Southern Agricultural Workers Association. He is a member of the American Society of Horticultural Science, American Forestry Association, American Association for the Advancement of Science and the American Society of Plant Physiology.

Clemson House



Fred Zink, Manager

CLEMSON, SOUTH CAROLINA

54 YEARS OF SERVICE
TO SOUTHERN AGRICULTURE



"The South's Foremost
Seed Breeders"

COKER'S PEDIGREED
SEED CO.

HARTSVILLE, S. C.



Write for Catalog and Prices

SPRING TIME IS AROMATIC
TOBACCO PLANTING TIME



PLANT AROMATIC TOBACCO
FOR THAT
BOOST IN INCOME



For That Ready Market Contact

SOUTHEASTERN
Aromatic Tobacco Co.

1628 East River Ext.

ANDERSON, SOUTH CAROLINA

"Researched-Feeds for the Southeast"
at the Red and Yellow Sign of . . .



FEEDS

Research Laboratories at SPARTANBURG

Research Farm at WHITESTONE

Mills Located At

SPARTANBURG and NEWBERRY

PEACH THINNING

(Continued from page 3)

naphthyl phthalamic acid). When applied to Elberta trees after full bloom, very good results were obtained. The thinning action is not dependent upon a particular stage of bloom and thereby allows the achievement of maximum benefit in fruit size.

Another chemical, maleic hydrazide will reduce the set of peaches during various stages of bloom with no visual damage to foliage. Applications of this chemical properly reduced the set of Halehaven peaches. When spraying was delayed until during the June drop, no results were obtained.

Post-Blossom Thinning:

Post-blossom thinning would offer a solution for blossom thinning hazards. Tests conducted in Missouri revealed that Elberta peach trees responded only slightly to sprays of naphthaleneacetic acid applied at full bloom or shortly after. When applied 35 days after full bloom, thinning was satisfactory. Generally, fruit buds on trees thinned with naphthaleneacetic acid after full bloom were not as cold resistant as were the buds thinned with dinitro, but were more resistant than buds on trees which were hand thinned. The amount of thinning which resulted from applications of a given concentrations varied with the variety. Naphthaleneacetic acid sprays offer several distinct advantages: thinning can be delayed until most danger from frost is over, the amount natural dropping of fruit can be determined, the material is compatible with common spray materials, and the timing does not have to be controlled as accurately as for full bloom sprays.

Chloro-IPC gives sufficient thinning uniformly over the tree and apparently does not damage foliage. Redhaven and Elberta have been thinned effectively with Chloro-IPC. This chemical is very volatile and requires higher concentrations for effectiveness during warm weather. Also, it does not possess dependability in the amount of thinning from year to year and in different sections of the country.

The most valuable spray thinning material would be one which would eliminate the competition between fruits on trees of early ripening varieties during a period soon after blooming. This would allow fruit to



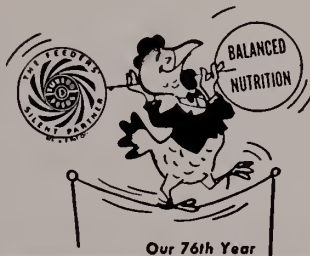
WILL YOU HAVE TIME...

for fishing when you have a farm of your own?

We sure hope so. In fact, the opportunity for the farmers of America to earn some leisure is growing every day. Their output per man hour has almost doubled since 1940. Nearly forty percent more livestock, and products are being obtained with only a ten percent gain in the amount of breeding stock.

As the makers of Tuxedo top-quality livestock and poultry feeds, we're pretty proud of our part in helping farmers in these parts achieve this fine record. As a result of our research in the lab and in the field Tuxedo-fed livestock are turning feed into dollars faster all the time.

We believe that you will get a mighty fine start when you graduate, if you plan to become a regular customer of your neighborhood Tuxedo dealer. Then, with all your stock thriving on efficient Tuxedo feeding programs, you just might be able to find the time to visit the old fishing hole once in awhile. Maybe we'll meet you there, since we like to do a little fishing now and then ourselves!



Our 76th Year

THE EARLY & DANIEL CO.
CINCINNATI 3, OHIO

TUXEDO FEEDS
FOR LIVESTOCK AND POULTRY

obtain the most desirable size. Hand-thinning could not be completely eliminated, but reduced considerably. Early ripening varieties could obtain larger size than by usual thinning procedures. With further experimentation, chemical thinning may prove to be invaluable to peach growers in the reduction of thinning costs. Both blossom and post-blossom thinning materials are being tested at Clemson and the Sandhills Experiment Stations in South Carolina.

AGRARIAN PHILOSOPHY

(Continued from page 1)

How can the college student tell agriculture's story and destroy this misconception? Aside from personal contacts, the way lies through more active work in student agricultural activities as the biennial Ag Fair and the recent Little International. The Agrarian will endeavor to do its part by featuring articles which will develop and intensify interest in agriculture.

CATTLE

(Continued from page 4)

to be allocated to livestock production. Trends in meat animal prices relative to all other farm prices have been upward. While this may indicate a lag in technological improvements in livestock production, it is primarily due to an increasing demand for meat relative to most other commodities.

Expected demand calls for a substantial increase in the production of beef—an expansion of 16½ to 17 billion pounds by 1975 as compared with the 10.3 billion pound average for 1951-53. This expansion would require favorable prices for beef relative to other meat animals or a relative decrease in production costs.

The expected demand for pork, 15.7 billion pounds by 1975, may be relatively easier to meet than the expansion in beef cattle. Hog numbers can be expanded or reduced quickly as demand, feed supplies, and prices dictate.

The ultimate size of the sheep industry will be determined primarily by the demand for lamb and wool as well as government policy relating to wool prices. The predicted increase in the size of the sheep industry approximates a potential that assumes relatively favorable prices for lambs and wool. Prospective demand has been set at approximately 825 million pounds.

A considerable expansion in equally productive livestock will be required to meet the expected aggregate demand for meat in the United States. Predicted demand would require that cattle numbers be increased to 120 to 125 million head by 1975. Beef numbers expected to expand approximately 45 per cent, and stock sheep are expected to expand approximately 28 per cent.

The location for the necessary expansion in production is a problem involving farm management and interregional competition. Livestock marketing research workers in the southern region are especially interested in the prospective production of livestock in this region.

The estimated per capita consumption of meat in the South has increased rather steadily since 1930 in actual terms and relative to the national average. These estimates of meat consumption indicate that the increased demand for meat in the



An increasingly common scene—Herefords on a Southern pasture

South since 1930 has been more than that attributed to the increase in population.

On the basis of two factors, per capita demand for meat in the South is expected to be 155.7 pounds by 1975, if the assumption of high employment and 1951-53 prices is made. These factors are the regional distribution of per capita income, and the estimated level of per capita income in the South relative to the nation.

For 1975, this expectation is 27.9 per cent above the 1950 estimated per capita demand for meat in the South. The predicted increase for the South is considerably larger than for the national average.

Predicted demand for meat in the South on a per capita basis is not broken down by kinds of meat produced by different livestock considered in this study. Consumption of pork in the South is now high compared to the national average and to the total meat consumption in the South.

Lamb consumption is extremely low in the South, but it appears likely that lamb consumption will increase in this region. Relatively few consumers in the South have had the opportunity to develop a taste for lamb. But even if lamb consumption increases in the Southern region, it will probably continue to be a minor item in the diet of the southern people.

An increase in consumption of beef and veal relative to pork is indicated for the future. Cattle numbers

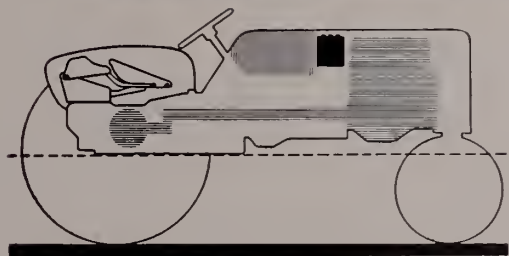
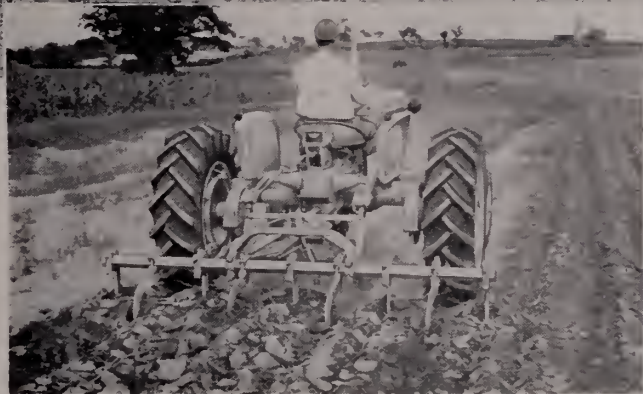
move up and down periodically, but can increase on a permanent basis only as feed supplies (including pasture) increase or feed resources are reallocated within the livestock industry. As cattle numbers increase, more feed is shifted to beef production at the expense of pork production unless the total feed supply is increased. The ratio of beef to pork consumption in the South over the next two decades will depend largely on the supply and relative prices of beef and pork at the national level.

Total demand for meat in the U. S. and the South will be determined by the growth in population, assuming that a per capita demand has been established. Thus, population growth is a major factor in anticipating the potential market for meat, both in the nation and in the South. But in the final analysis, consumption of meat in the South as well as the nation will be determined by the supply of meat available.

These predictions are based on the assumption that demand, as it influences prices, will direct resource allocations to bring about additional production. Demand in the aggregate will be influenced by population and income. Population, income, and demand predictions for 1975 may have to be revised as this date is approached, however. Although conceding that limitations on the accuracy of these predictions exists, present and potential livestock producers are constantly making production de-

(Continued on page 16)

Farming steps years ahead



New **Low-Line
High-Crop** Design

Stops the eye! New ease in farming!

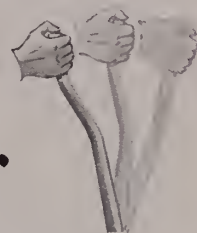
ALLIS-CHALMERS

Engineering in action

NEW **dynamic** **D-14 tractor**

with
exclusive
new

Power Director



New Low-Line, High-Crop design . . . and an exclusive new way of directing power and speeds at will —

The Dynamic D-14 introduces a new tractor concept!

- ☆ *New Power Director* provides 8 speeds ahead. Quick-shift to high or low range *on the go* . . . operating with constant-speed, live PTO. Farmers have never experienced anything like it!
- ☆ *New Roll-Shift* front axle spaces front wheels without blocks or jacks. And naturally, *the original Power-Shift* rear wheels, too! Power Steering if desired.
- ☆ *New Enclosed Hydraulic System* . . . new Range Selector for TRACTION BOOSTER system controls traction weight on rear wheels, *automatically*.
- ☆ *New Easy-Ride* seat brings an entirely new feeling of comfort and security. Roomy platform lets operator step up easily and stand safely.
- ☆ *New D-14 cultivator* is easily mounted. Gangs roll in like a rubber-tired wheelbarrow. Rear-mounted implements interchange with WD and WD-45 Tractors. SNAP-COUPLER hitch — of course!

All this — plus the power of the Dynamic D-14's new POWER-CRATER engine. Here is 3-plow farming with a brand new feel . . . farming that steps years ahead.

ALLIS-CHALMERS, FARM EQUIPMENT DIVISION
MILWAUKEE 1, WISCONSIN



*Listen to the National
Farm and Home Hour. . .
NBC — Every Saturday*

SNAP-COUPLER, TRACTION BOOSTER and
POWER-CRATER are Allis-Chalmers trademarks.

TALL CORN

For unadulterated whimsicality, we take you now to an Indian reservation. Rigor mortis had set in for Chief Shortcake.

His brother chiefs came to his teepee and offered to defray all the burial expenses. But his squaw squawked. What did she say?

"Squaw bury Shortcake."

Then there was the family who named their dog Carpenter because he did odd jobs around the house.

Doughterty took his girl out in the fog and mist.

Then there was the absentminded professor who forgot to write and \$8 book to sell to his class.

"So you want to kiss me! I didn't know you were that kind."

"Baby, I'm even kinder than that!"

A biology professor was unwrapping a parcel before his class which he explained to his pupils was a fine specimen of a dissected frog. Upon disclosing two sandwiches, a hard-boiled egg, and a banana, he was very surprised and exclaimed, "But surely I ate my lunch."

Said one skeleton to the other skeleton locked in a closet: "If we had any guts we'd get out of here."

Imagine the newspaper boy's embarrassment when he opened the wrong door in a depot and called: "Extra, Paper!"

"How did you puncture that tire?"
"Ran over a bottle."

"S'matter, didn't you see it?"

"Naw, some freshman had it under his coat."

LITTLE INTERNATIONAL

(Continued from page 7)

ception of the College Freshman team awards, were presented upon the conclusion of the events.

The College Freshman awards were presented to the participants by the Block and Bridle Club at a banquet held at the Clemson House. Also pre-

sented at the banquet was the trophy for the Beauty Queen. This Beauty Queen had been chosen by a group of impartial judges. Of the entries that were made, Mrs. Allan Pettigrew was chosen Queen of Little International with Mrs. Roy N. Mathis and Mrs. Roger N. Chastain being chosen as runners-up. As Queen of the Little International, Mrs. Pettigrew presented all trophies and ribbons to the winners.

Although many mistakes were made in the planning and actual performance of the exposition, many valuable lessons were learned. Through the combined efforts of the Block and Bridle Club and the Animal Husbandry staff of the college, an annual event has been added to Clemson's calendar of events. It is felt that this show will grow with the livestock industry of this state, and serve to develop and intensify interest in livestock production.

Through the years we have furnished our "DIXIE" equipment for canning and food preservation to the Agricultural High School Canneries in South Carolina.

We have a complete line of CANNING EQUIPMENT, for schools, small commercial canneries, institutions, etc.

Also special items for Locker Plants, PEA HULERS for growers and marketers, and many others items.

Write for our catalog.

DIXIE CANNER COMPANY

P. O. Box 1348
ATHENS, GEORGIA

CATTLE

(Continued from page 14)

cisions on this basis. The long-run picture for the livestock industry in the South is favorable. However, there may be periods of declining prices during which many producers, especially those producing on a marginal basis, will be caught in a price squeeze.

The area in which the expansion of the livestock industry should occur is a problem. The aggregate demand for meat in the U. S. is expected to expand at a rate of two per cent a year. The expansion in the aggregate demand for meat in the South is expected to be about one per cent above the rate for the United States, or an expansion of three per cent a year.

This will give justification to expanding livestock production in the South at a rate faster than in other regions of the nation.

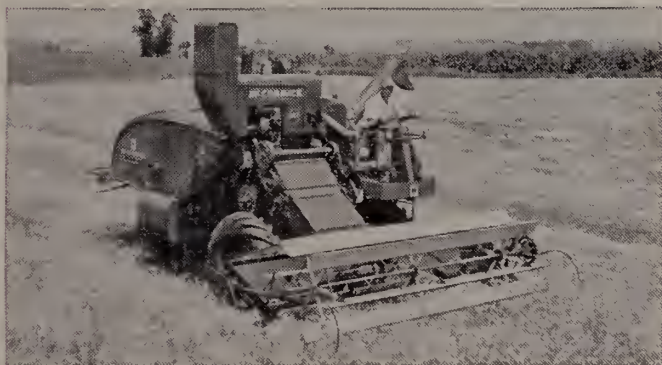


Cut a full 10-foot swath easily! You sit where you can sight right down the grain line. Reach-easy cantrals are grasped for fast, accurate use. Quick precise external adjustments. Only five points on No. 101 require daily lubrication.

Best buy in a 10-footer!

Compare performance and value... see why the NEW McCormick® No. 101 Harvester-Thresher puts you ahead!

Here's the new performance leader of the 10-foot combines—at an amazingly low price! No other 10-footer gives you so much: 55 hp IH engine . . . on-the-go speed control . . . big-capacity 28-inch straight-through separator with 22-inch diameter rasp-bar cylinder, rotary straw racks, opposed-action cleaning, and 22-inch variable-speed cleaning fan. Big 40-bushel grain tank.



Famous McCormick No. 141 self-propelled—with 68 hp engine, variable-speed drive and double-shake cleaning. The level-land model comes with 10, 12, or 14-foot platform, windrow pickup, or 2-row corn unit. The No. 141 also is available as a Rice Special or an automatic-leveling Hillside combine.



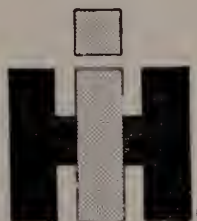
Popular McCormick No. 76! This full-width, straight-through combine has oversized separating and cleaning areas that easily handle a full 7-foot swath or heavy windrow. You can get the McCormick No. 76 with 6 or 7-foot platform or windrow pickup . . . power take-off or 24 hp IH engine.

Hurry your '57 harvest with a McCormick combine that bins more of your crop. Your IH dealer will point out unmatched grain-saving features . . . unmatched ease of adjustment and service. See him soon! Use the IH Income Purchase Plan.

SEE YOUR

INTERNATIONAL HARVESTER

DEALER



International Harvester products pay for themselves in use—McCormick Farm Equipment, Formall and International Tractors . . . Motor Trucks . . . Construction Equipment—General Offices, Chicago 1, Ill.



Seems almost everyone knows the
good word for **WINSTON**

AND THE WORD IS "TASTE" . . . *good* taste!
See if you don't think that Winston is the best-tasting
cigarette you've ever smoked! Part of the reason is the
exclusive snow-white filter, carefully made to let you
enjoy Winston's rich, full flavor. It's no wonder, really,
that Winston is America's best-selling filter cigarette —
and by a *wider margin than ever!* Try a pack real soon!

R. J. REYNOLDS TOBACCO CO., WINSTON-SALEM, N.C.

Enjoy **WINSTON**...with the snow-white filter in the cork-smooth tip!

